128 - 12 - Misc. Art Regs.

Navy Medical newsletter

May 1970

United States Navy Medical Newsletter

Vol. 55 May 1970 No. 5

POLICY

The U.S. Navy Medical Newsletter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry and allied sciences. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article, in its original form. The opinions and conclusions expressed in the articles or items included herein are those of the respective authors and do not necessarily represent the views of the Department of the Navy, the Bureau of Medicine and Surgery or any other governmental department or agency thereof.

DISTRIBUTION

The Navy Medical Newsletter is distributed to active duty Medical Department personnel via the Standard Navy Distribution List (SNDL) vice personal addresses. Any increase or decrease in the number of allotted copies should be requested via the local Commanding Officer through U.S. Naval Publications and Forms Center, Code 306, 5801 Tabor Avenue, Philadelphia, Pa. 19120. Other addressees may forward changes of address in the same manner, giving full name, rank, corps, old and new address, and zip code. The mailing label taken from the most recent issue should be forwarded if possible. See inside back cover for CORRESPONDENCE AND CONTRIBUTIONS.

The issuance of this publication approved in accordance with NAVEXOS P-35.

NAVMED P-5088

CONTENTS

Credits: Cover Photograph reveals ENS Ann A. Fournier, NC, USNR, (Left) wearing the 1908 cotton, Ward Nurse uniform. ENS Caryl A. Lima, NC, USNR (Right) is wearing the latest style uniform in dacron polyester.

Page 2. At a recent meeting of the Executive Committee, Association of Military Surgeons of the U.S., VADM G. M. Davis, MC, USN, Surgeon General of the Navy and 1969-1970 President of Association of Military Surgeons, presents a lifetime membership to BGEN F. E. Wilson, AUS, Ret, Executive Director of AMSUS.

All pictures are Official U.S. Navy Photographs unless otherwise indicated.

from the Chief

If, as has been estimated, the half life of a medical education can be gauged at five years, then it behooves each of us to diligently maintain and develop necessary resources for effective medical practice and delivery of health services. Those charged with the privileged responsibility for care of the sick and wounded are generally well aware of this obligation to continuously update professional concepts and knowledge.

The primary function of the Association of Military Surgeons has always been to provide a forum for active communication between members of the Federal Medical Services. Through its Annual Meetings and monthly publication, Military Medicine, the Association has served admirably in providing timely professional information and the opportunity for active communication between members of the Federal Medical Services. This publication also affords an excellent media for authors to initially gain recognition of their work.

If future patient care delivery systems are to become responsive to the needs of this Nation's citizens, those who inhabit the two worlds of medical and military persuasion surely should participate actively in such a professional association. In addition to the obvious pleasure and advantages afforded by active membership, professional contributions to Military Medicine, and attendance at organized meetings, an individual responsibility to sustain professional competence is also met. The Association can well become the speaking voice by which our aims, desires and needed changes can be made known.

Members of the Navy Medical Department are invited to become participating members of the Association of Military Surgeons.

DAILY PRAYER OF MAIMONIDES

"Let me be contented in everything except in the great science of my profession. Never allow the thought to arise in me that I have attained to sufficient knowledge but vouchsafe to give me the strength and the ambition to extend my knowledge. The art is great, but the mind of man is ever expanding."

ANNIVERSARY GREETINGS TO THE NAVY NURSE CORPS

Having been established by act of Congress in May 1908, the Navy Nurse Corps was ably represented by the "Sacred Twenty" who reported to the U.S. Naval Hospital in Washington, D.C., for orientation and duty by October 1908.

Since that early beginning, nursing service to the sick and injured has been widely extended. During peace and war, Navy nurses have served with distinction in every forward area, entering actual combat zones on land, hospital ships, and ambulance planes, proving their eminent value and capacity for growth in all aspects of health care, delivery, and research. As a teacher of the nursing arts, the Navy Nurse Corps has earned our admiration.

On the occasion of their 62nd birthday, we pay tribute to all Navy Nurse Corps officers. We honor their past glories, their unsurpassed presence, and the unlimited promise which their future holds.

G. M. Davis

G. M. DAVIS
VADM, MC, USN
Surgeon General

ANNIVERSARY GREETINGS FROM DIRECTOR, NAVY NURSE CORPS

Upon assuming the office of Director, Navy Nurse Corps, I wish to extend my personal greetings and best wishes to each of you. It is an honor to serve as your Director, and I enter upon my duties with a sense of humility, with appreciation of the attendant responsibilities of this office and with eagerness to render the service you expect and to which you are entitled. It is my earnest hope that through close communication, your problems and aspirations will become my concern; and that together our accomplishments will bring rewarding satisfaction to you and credit to the Navy Nurse Corps and the Navy Medical Department.

On 13 May 1970, I will join with you and your friends in celebrating the anniversary of the establishment of the Navy Nurse Corps. We have a noble heritage and can be justifiably proud of all members, past and present, who have faithfully served with unfailing dedication, perseverance, loyalty and proficiency; characteristics which have marked our Corps from its inception to the present. I know you share my pride in our Corps, and I have the greatest confidence that you will continue your exemplary record of humanitarian concern in this new decade of challenge and opportunity. I am certain that the success which has marked the progress and achievements of our Navy Nurse Corps for the past sixty-two years will serve as a prologue to future accomplishments.

I extend to you my warmest personal regards and sincere best wishes for a very happy anniversary.

Alene B. Duerk

ALENE B. DUERK
Captain, NC, USN

NAVY NURSE CORPS—A PICTORIAL REVIEW

1811 Dr. William Paul Crillon Barton, a young Navy surgeon who later became the first Chief of the Navy's Bureau of Medicine and Surgery, was commissioned by the Secretary of the Navy to submit his recommendations for "conducting hospitals and institutions for the sick." He wrote, "The NURSES whose number should be proportionate to the extent of the hospital and number of patients, should be women of humane disposition and tender manners; active and healthy. They should be neat and cleanly in their persons; and without vices of any description . . . and are to attend with fidelity and care upon all the sick committed to their charge. . . ." This was nine years before the birth of Florence Nightingale!

1898 Trained nurses were employed on a contract basis to meet the nursing needs in certain naval facilities during the Spanish-American War.

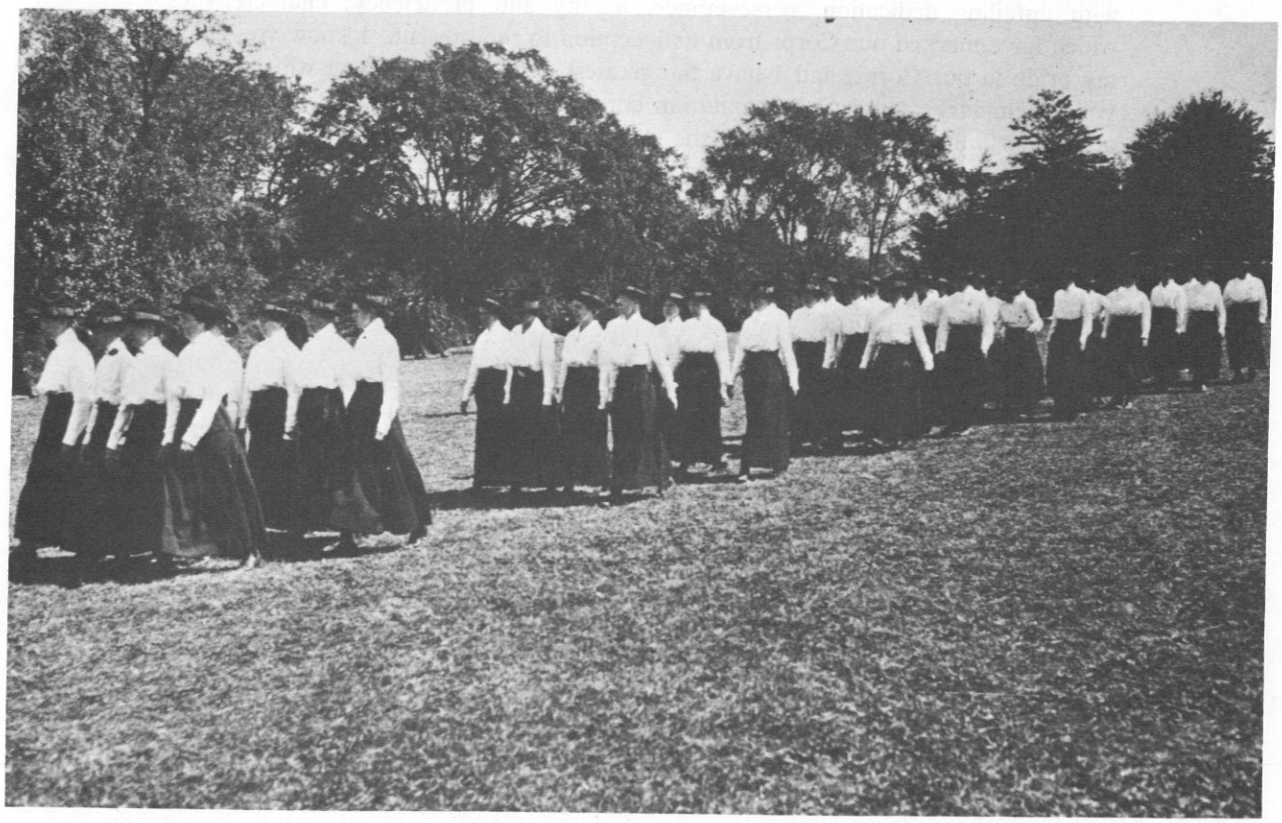
1899 The Surgeon General was authorized by the Navy Department to employ and subsist trained nurses. Their number was not to exceed twenty at any one time, nor was their pay to exceed $4.00 per day.

13 May 1908 By act of Congress, the Nurse Corps, U.S. Navy, was established, and authorized one superintendent and as many chief nurses, nurses and reserve nurses as necessary.

8 Aug 1908 Esther Voorhees Hasson was appointed first superintendent. By October 1908, the first twenty nurses, who later came to be called the "Sacred Twenty" had reported to the U.S. Naval Hospital, Washington, D.C. for orientation and duty. (The cover photograph of this Medical Newsletter contrasts the Ward uniform of 1908 with that of the present day.)

1916 U.S. Naval Reserve Force was created with a provision for Reserve nurses.

1917 Total enrollment of regular, reserve and reserve force nurses was 466. Naval base hospital units were established at several civilian hospitals, and nurses were sent to the Navy's base hospitals in England, Ireland, Scotland, and France. Some were loaned to Army field units in France, as well. Schools of nursing were established at St. Croix and St.



The Maxi look, circa World War I.

Thomas in the Virgin Islands and one nurse there was assigned to the Richmond Insane and Leper Asylum as supervisor.

1918 Total nurses 1386. Base pay was increased to $60.00 per month. The uniform regulations were modified. An outdoor uniform described as "Navy blue Norfolk suit, Kitchener pockets, tan gloves, black shoes or tan boots and a sailor hat" was designed. This was not compulsory except for those going on foreign service or serving in hospital ships or transports. The Red Cross provided complete equipment to nurses sent overseas with either the Army, Navy, or Red Cross—Regulars as well as Reserves. Included in this outfit or recommended for inclusion beside the uniforms were interesting items such as sleeping bags, ponchos, sou'westers, black tights, heavy wool underwear, rubber boots, hot water bottles, bed shoes, long sleeve (knit) corset covers, and a small United States flag. The Red Cross supplied to nurses serving in the United States caps and a "Red Cross" cape of navy blue lined with scarlet flannel for wear over the ward uniforms.

1942–45 During World War II, the Nurse Corps was extended to 11,086 officers including members of both the Regular and Reserve Corps on active duty. Nurse Corps officers within the continental limits were assigned to 40 naval hospitals, 176 dispensaries and 6 hospital corps schools. They brought nursing care to the front lines aboard 12 hospital ships, in air evacuation of casualties, and to foreign lands where American women had never been seen before. At land based establishments overseas, they were assigned to naval activities in the Aleutian Islands, Alaska, Australia, New Zealand, New Hebrides, New Caledonia, Russell Islands, Solomon Islands, Admiralty Islands, Marianas Islands, Hawaii, England, Africa, Italy, Newfoundland, Bermuda, Canal Zone, Puerto Rico, Cuba, and Trinidad. When the surrender was signed aboard the U.S.S. MISSOURI in Tokyo Bay in August 1945, nurses were stationed aboard three hospital ships waiting to go ashore to administer care to the allied prisoners, and to evacuate them from Japan.

Eleven nurses were captured by the Japanese at Manila, and interned at Santo Tomas; they were later moved to Los Banos, Philippine Islands. They survived 37 months as prisoners of war, and were liberated in 1945.

Apr 1947 Army-Navy Nurses Act established Nurse Corps as a permanent staff corps of the U.S. Navy. Captain DeWitt became the first director of the corps as a permanent staff corps. This act author-

The first picture taken after dramatic rescue from Los Banos Camp on 23 February 1945 is pictured here. ADM Thomas Kinkaid, USN, Commander 7th Fleet and Southwest Pacific Force, welcomes Navy Nurses on their return to American safety with our forces. Uniforms were made in the prison by the nurses who ripped up dungarees to obtain material. In the rescued party were: LT Susie Pitcher, LT Dorothy Still, Mrs. Basilia Stewart, LT Goldia O'Haver, LT Eldene Paige, LT Mary Chapman, LCDR Laura Cobb, Miss Maureen Davis, LT Mary Harrington, LT Helen Gorzelanski, LT Bertha Evans, LT Margaret Nash, Miss Helen Grant and LT Edwina Todd.

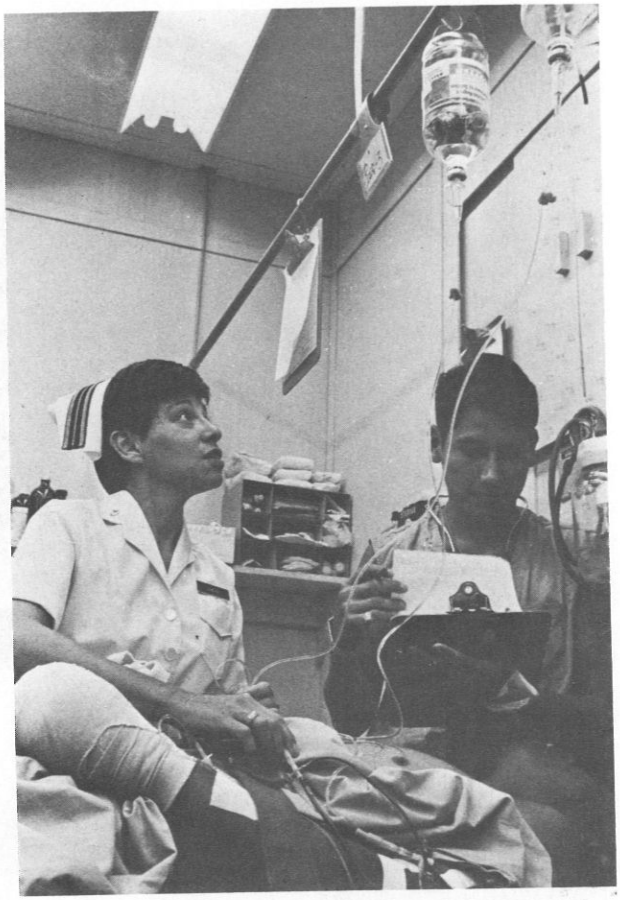
ized permanent commissioned rank and permitted integration of reserves up to 35 years of age in the Regular Navy.

30 Jun 1950-7 July 1953 Korean Conflict. Following World War II, the Nurse Corps was reduced in strength commensurate with the overall reduction in naval forces. On 30 June 1950, there were 1,950 regular and reserve Nurse Corps officers on active duty assigned to 26 naval hospitals, 67 station hospitals and dispensaries in and outside continental United States; 3 hospital corps schools; 2 hospital ships, and 8 Military Sea Transport Service ships.

The peak census during the Korean Conflict was reached on 30 June 1951 when 3,238 Nurse Corps officers were on active duty (USN 1,515; USNR 1,723). The three Hospital Ships, U.S.S. CONSOLATION, REPOSE, and HAVEN rotated as station hospitals in Korean waters during the hostilities.

29 Apr 1960 Flight nursing course and assignment of Nurse Corps officers to flight duty with Air Force Military Air Transportation Service discontinued.

11 Sept 1961 First women to be assigned aboard a combatant ship were Nurse Corps officers who assisted in hurricane disaster relief mission in Texas on




STEINOCHER

Three of the four Navy Nurses awarded the Purple Heart Medal in Vietnam received their awards from CAPT A. Kuntze, CO, U.S. Naval Support Activity, Saigon. From L to R: LT B. J. Wooster, LT R. A. Mason and LTJG A. D. Reynolds. (LT F. L. Crumpton was flown to Philippines earlier for treatment.) Injured during bombing of the Brink BOQ on Christmas Eve, 1964, the nurses refused medical treatment for themselves while rendering care and assistance to others wounded by the explosion. CDR M. D. Turley, XO of NSA, assisted his CO in the presentation.

temporary additional duty aboard the aircraft carriers, the USS SHANGRI-LA and USS ANTIETAM.

18 Feb 1963 Nurse Corps officers were assigned to duty at the Station Hospital, Headquarters Support Activity in Saigon, South Vietnam.

Jan 1965 Four Navy nurses attached to the Station Hospital, U.S. Navy Headquarters Support Activity, Saigon, Vietnam were awarded the Purple Heart Award for injuries received during the Viet Cong terrorist bombing of the Brink Bachelor Officers Quarters. These nurses became the first women members of the U.S. Armed Forces to receive the Purple Heart Award for injuries in the Vietnam Conflict.

25 Aug 1965 George M. Silver was appointed as Ensign, Nurse Corps, U.S. Naval Reserve. Ensign Silver of Rehobath, Massachusetts became the first male nurse to be commissioned in the United States Navy.

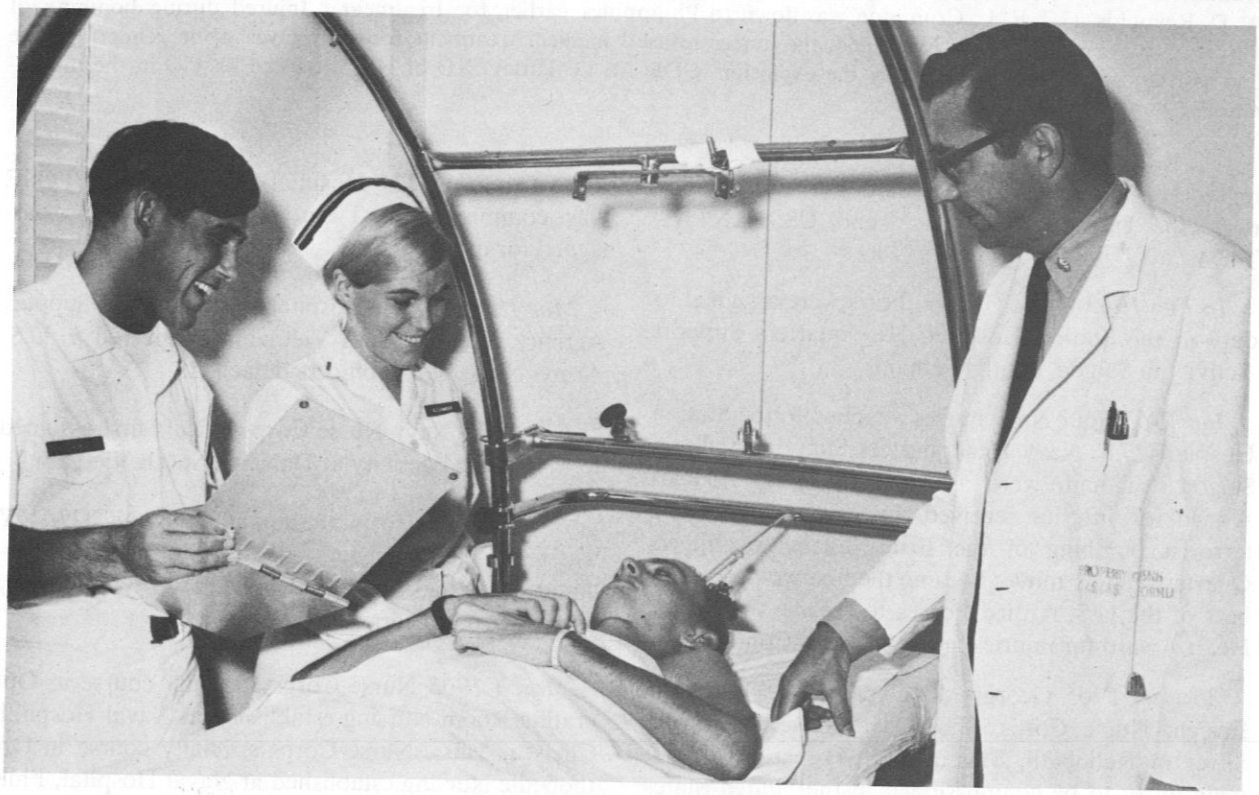
18 Oct 1965 The Hospital Ship, U.S.S. REPOSE was commissioned. Twenty-nine Navy nurses assigned for duty.

Mar 1966 Station Hospital, Headquarters Support Activity, Saigon, South Vietnam, transferred to U.S. Army. Nurse Corps officers detached.

Sept 1966 Navy Nurse Corps officers first assigned to the medical activity at DaNang, South Vietnam.

15 Nov 1966 Hospital Ship, U.S.S. SANCTUARY was recommissioned to serve in the handling of casualties from the Vietnam Conflict. Twenty-nine Navy Nurse Corps officers were assigned.

March 1968 Nurse Corps specialty course in Operating Room Nursing established at Naval Hospital, Chelsea, Mass. Nurse Corps specialty course in Orthopedic Nursing established at Naval Hospital, Philadelphia, Pa.



Team visits Orthopedic patient at Naval Hospital, Oakland, California.

IMPLICATIONS OF THE TEACHING MACHINE AND PROGRAMMED* INSTRUCTION FOR HOSPITAL STAFF EDUCATION DEPARTMENTS

By CDR Florence K. Job, NC, USN, USS REPOSE (AH–16)

No nurse can deny that a major function of her professional endeavors lies within the realm of education. Whether one is engaged in formal educational activities, teaching paramedical personnel at the bedside or instructing patients and their families, each of us spends a large portion of her time communicating new facts to others. While our main interest is primarily concerned with nursing, enough of our time is spent in transmitting knowledge that it behooves us to explore all avenues by which the process can be performed expeditiously. To improve our own performance, it is natural that we should investigate the newer developments in the field of education.

The teaching machine and programmed instruction, has had greater impact upon educational methodology than any other concept promulgated during the past decade. Although of recent origin, its possibilities have captured the imagination of educators in many fields of endeavor and the attempt to apply the principles learned from the behavioral sciences to pragmatic situations has resulted in a wealth of instructional material. It is not strange, in this day of advanced technology, that the idea of a machine capable of teaching should have wide appeal. Lest, however, there are conservatists among you who would mourn the loss of human interaction in the teaching situation, let me assure you that machines do not teach—they are merely one means by which instructional material can be presented to the student.

We said that teaching machines, per se, cannot teach. The heart of the teaching machine lies within the material with which it is programmed and it is the manner of presentation, as well as the substance, which is vital to its effectiveness. The manner of presentation is of utmost importance in any teaching situation. In addition to a logical presentation, many other factors must be considered. The motivation of the student, the speed at which he can progress and the selection, availability and proper timing in the use of audio-visual aids are basic to any program. When one must teach large numbers of students with varying degrees of capability, the difficulties encountered in meeting the needs of each student are multiplied. It is in such situations that the teaching machine can be of greatest value.

Before discussing the manner in which the nursing profession can utilize programmed instruction and teaching machines, a brief review of the mechanics of the teaching machine and programmed instruction is in order. Programmed instruction and teaching machines are often thought to be synonymous. They are not. Programmed instruction is a much more comprehensive term. Teaching machines are merely one type of hardware by which programmed instruction may be presented to the student. Teaching machines are manufactured in a variety of styles—ranging from simple mechanisms which employ paper and pencil to extremely complex automated devices which are combined with slide projectors, movies, television and/or computers. Another means which has proven as effective, and not as expensive, as the teaching machine is the presentation of programmed instruction material in textbook form—albeit a form that is drastically different from the usual textbook. While the machine has a slight edge over the textbook variety of programmed instruction in that it controls the teaching situation more closely, it has been found that textbooks are effective and have the additional value of being more readily available.

Whether the method of instruction is implemented by machine or textbook, the basic principles of programmed instruction must be adhered to in order to produce an effective learning instrument. It is the manner of presentation which is crucial to the programmed instruction method. Programmed instruction is based on behavioral psychology and no other application of teaching methodology so thoroughly examines what is to be taught, requires the explicit description and specification of the learner, or insists on as clear an observable description of what the learner will be able to do at the conclusion of the program. Furthermore, no other application of teaching methodology has the built-in requirement for testing, revision and improvement until the criterion values of performance are attained.

Let us examine why this is so and how it is incorporated in programmed instruction. An important feature of programmed instruction is that it contains the three key elements of the learning process-stimulus, response and reinforcement. At first the student is stimulated by being presented with a question and, since he cannot proceed at this point without replying, he must become actively involved with the material being offered. He must respond. He cannot pur-

*Presented at the November 1969 meeting of the Far East Chapter, Association of Military Surgeons.

sue the course passively, as he might by reading an ordinary textbook or listening to a lecture. The programmer then provides a very necessary ingredient for successful learning—he informs the student whether or not he has made the correct decision. In this manner, the student is reinforced when he has learned properly or, if he has made an error, the mistake can be corrected immediately. Thus, by being rewarded when he makes a correct response, the student is encouraged to proceed with the learning process.

Another unique feature of programmed instruction is that it insists on hard facts rather than vague generalizations. (Subjects however can include cognitive learning, motor skill learning, and affective learning). The results must be measurable. Programmers must be ready to define their objectives critically—to prepare their lesson in detail and elicit response from the student at every stage of the class. The terminal behavior that is desired at the end of the course must be stated in terms which are objective and which can be observed in the student after he has completed the course. One must state what one wants to teach and then determine how effective the programmed instruction is in reaching the goal. Most programmers strive for the goal that 90% of the students will achieve a score of at least 90% at the completion of the exercise. These results are obtained frequently. Contrast these results with the usual passing classroom grade of 65%. Programmed instruction follows closely the old adage that the teacher hasn't taught if the student hasn't learned.

Once the terminal behavior has been set, the programmer decides how to best transmit the knowledge the learner must have to meet the goals. The material to be taught is then broken down into small steps. The steps gradually become more complex as the student learns and is able to master more of the subject.

Another tremendous advantage of programmed instruction is that the student is able to progress at his own speed. He works alone and is in direct competition with no one but himself.

Most programmers use one of two methods in developing instructional material. The linear method advocated by Dr. Skinner of Harvard which breaks the material down into very small steps or the branching or scrambled textbook style developed by Dr. Crowder. Either method is compatible with use in a machine or textbook. Which method is selected is determined by the type of material to be taught and/or the developmental stage of the learner. The two methods are basic to programmed instruction—but many variations employing slides, movies, tapes, etc. have been developed.

While it is evident that school systems may benefit from the employment of programmed instruction, one might well ask how hospitals can utilize the technique. In particular, how can staff education departments and nursing personnel use programmed instruction to carry out their primary mission—care of the patient?

Programmed instruction can help staff education departments by reducing the time required to learn a subject, conserving instructor time, decentralizing training and increasing the number of students reached for any program of instruction. Because of the criteria demanded by programmed instruction, it can also upgrade the consistency of course quality.

Patients are cared for by people and Nursing Service cannot divorce itself from its responsibility to foster an environment conducive to the personal and professional growth of the personnel under its jurisdiction. Hospitals are responsible for the training and continuing education of large numbers of individuals who vary in regard to capacity to learn, prior education, social and ethnic background and motivation. When one considers the variety of hospital personnel, such as nursing assistants, ward attendants, volunteers, technicians and food service employees—not to mention the professional and patient populations, the task of providing educational opportunities geared to individual needs is staggering. The task is further complicated by the duty hours of the personnel involved, the fluctuation of the work load and availability of adequate classroom space.

Programmed instruction will not cure all the ills encountered by staff education departments attempting to teach the heterogeneous groups with which they work, but it can help to minimize obstacles met in organizing and implementing educational activities. Programmed instruction will never totally replace the teacher but it can make her task considerably easier if used judiciously. Programmed instruction has some definite advantages. First of all, it is individualized. The student progresses at his own rate. He can take as long as necessary to learn or proceed as rapidly as he is able. Our student groups contain individuals of varying degrees of capability and much time is frequently lost in attempting to bring the slow learner up to the level of the students who are able to grasp the material rapidly. This situation is often a double-edged sword. By progressing slowly enough for all students to grasp the material, one easily loses the interest of the more rapid learn-

ers. The problem is further complicated when the less rapid student is reluctant to ask questions. He fails to obtain the proper knowledge on which the learning process is developed. This leads to frustration, discouragement and, frequently, failure. Programmed instruction assists the learner in that he progresses at his own speed and obtains correct information as he goes along.

Another advantage of programmed instruction is that the student works independently. The disadvantages created by a need for time schedules and available classroom space are surmounted. The instructional materials are readily available, particularly when they are in textbook form and can be pursued at the student's leisure wherever he happens to be. There is no need to coordinate time available to both the teacher and the student. If the work happens to be light, the student can find a quiet corner and utilize the available time for self-improvement. Thus, no matter what shift the student is working, instructional material is on hand. He has a private tutor—when and where he needs one.

The fact that there is a need for different types of information in various areas of the hospital is another factor to consider in scheduling classes. While there are basic procedures that are applicable to all types of patients, the specific talents required in any one area of the hospital are peculiar to a particular service. Thus, one might expect personnel working on a urology ward to be adept at catheterizing while personnel on an orthopedic ward will be more concerned with the care of patients in traction and casts. Not all patients require chest tubes or cardiac monitors. While it is desirable that all personnel be familiar with the nursing care of all types of patients and adept in the use of all types of equipment, it is not likely, in actual practice, that one will have available a sufficient number of staff members so highly skilled. We rely, to a large extent, on paramedical personnel.

To be utilized effectively, paramedical, as well as professional, personnel must have the benefit of continuous education. And the need for continuing education is great. It is said that a person graduating from college today must be trained once every decade of his working life. During their basic training program, corpsmen are taught the rudiments of patient care. While these procedures have wide applicability, they do not prepare the corpsmen to render comprehensive care to the individual patient. Hospital Corps Schools do not teach specific nursing care for patients with particular diseases or conditions. When the corpsman comes in contact with a patient whose condition interests him, he is psychologically ready for information about the abnormality. Because wards are busy places, the information he obtains is often very brief. Classes about his particular interest are difficult to organize. Yet, if programmed instruction were available, he could utilize slack time during the day or take the material home with him to study.

We give much lip service to teaching patients; yet, how often do we find time to actually sit and discuss the individual patient's situation and the adjustments he must make in his daily life in order to live optimally within the limits created by his physical condition? While available time is a prime factor in teaching patients, other factors intervene such as difficulties in language and the possibility that fear, awe or ignorance will prevent the patient from questioning the teacher, thereby reducing his learning ability. Another problem which is frequently encountered but not readily recognized, is that when we are ready to teach the patient, he is not ready to learn. He may be overwhelmed by the new development or he may be distracted by other pressing problems which take precedence. Or he may, simply, not foresee questions which will occur to him at a later date. Under these circumstances, teaching may have negligible value. Consider the advantage of having a teacher available when the patient is psychologically prepared to absorb the new information. Programmed instruction courses have been developed for patient use following colostomy, stroke, and recognition of diabetes—all areas in which patient understanding and self-help are vital.

Our clinics usually exist in a hectic environment. While the staff is rushed, the patients frequently find that they must spend an hour or more waiting to see the doctor. Wouldn't it be wonderful if such time could be utilized for teaching purposes? Teaching machines are available that could be installed for use by the patient while waiting in clinics. Certainly OB patients would be interested in many aspects of prenatal and postpartum care. Parents could gain a wealth of information about child care. Diabetics could be taught the fundamentals of proper diet and hygiene. The possibilities for patient teaching are limitless.

Staff Education Departments are also confronted with the problem of preparing staff members for upgraded positions. Many of you, no doubt, have been faced with the task of preparing Charge Nurses for supervisory duties. When an attempt is made to teach a group, it is often evident that the individual members, because of previous experience and education,

are at different levels of development and do not have a common background upon which the teacher can build. Programmed instruction can be invaluable in providing material to establish a firm basis from which to proceed. Programmed instruction will not eliminate the teacher—but it can utilize her in a more effective way. Instead of teaching the rudiments of supervision, more time can be spent on the practical aspects of applying the theories of supervision and administration to the actual working situation. Class time can be utilized for clarification, emphasis and clinical applications.

These, then, are some of the advantages of employing programmed instruction by Staff Education Departments, and some of the areas to which it could be applied. However, there are limitations and disadvantages which should be considered. Not all subjects can be reduced to programmed format—the primary stumbling block is that not all behavior can be described in measurable terms. If a program is to be devised, the terminal behavior of the student must be envisioned at the outset in developing the program. With increased skill in developing programs, it is being recognized that more can be taught by programming than had been previously realized. Efforts to program such topics as leadership and administrative judgment are now appearing.

The economics involved in programmed instruction deserve utmost consideration. Unless the subject to be taught is extremely critical to the success of a given program, it cannot be justified economically; unless a fair number of people in an institution require it, the cost is prohibitive. Developing good programs designed to meet specific needs is time-consuming and there are relatively few nurses trained in the techniques necessary to develop effective programs. Nurses with expertise, knowledgeable in the techniques of programmed instruction, are needed. To obtain the ultimate benefit from programmed instruction, more nurses must become acquainted with the techniques of programming. Military facilities are in a more advantageous position than small civilian hospitals in that increased opportunity for coordination among hospitals is presented. If programs are developed at a federal level and distributed to all the institutions, the cost per student trainee would be greatly reduced. Programs produced at a local level could be readily exchanged among the many military installations.

To reduce the cost of producing programs, advantage should be taken of suitable programs which are available on the commercial market as long as they are applicable to a specific situation. Many nursing topics are available in programmed form such as aseptic technique, intravenous therapy, fluid balance, medical terminology, hypodermic injections, concepts of radiation, defenses against anxiety, and principles of sterilization.

The method of implementing programmed instruction into existing Staff Education programs must be considered. Will this form of teaching be utilized as preparation for more advanced learning, to supply information for needed skills, or to supplement present abilities? These are pertinent questions to be answered. How the programs will be delivered to the students must be considered. Is there space available for installation of teaching machines or will programmed textbooks be supplied for individual use? What specific population of the hospital will benefit most by this form of instruction?

Programmed instruction material has been developed in many areas of learning—from bridge playing to electronics. Industry has taken the leading role in using programmed instruction but it has also been utilized by the Armed Forces, U. S. Office of Education and other governmental agencies for students from the preschool to postgraduate levels. Some of the most effective programs have been developed in the field of medicine. The growth in numbers of available programs has been tremendous. The first was published in 1963; by March of 1968, the number had increased to 60. The nursing profession preceded the medical in publishing programmed instruction by one year. The University of South Dakota and the University of Rochester were among the first institutions to develop extensive use of programmed instruction.

There is little doubt that programmed instruction is here to stay and that its importance in the field of education is increasing daily. How and when hospitals will benefit by the technique will depend upon our readiness to accept new innovations and apply them for the benefit of our personnel and patients.

BLOOD LOSS USING STRYKER RECIPROCATING SAW IN VERTICAL OSTEOTOMY OF THE MANDIBLE

By CAPT Howard B. Marble, DC, USN, Research Work Unit: MR005.20–6053*

Introduction

The surgical correction of mandibular prognathism is frequently accomplished by performing bilateral vertical osteotomies on the ascending rami of the mandible. The bone sectioning has been accomplished with various cutting devices including Gigli's saws,[1] nasal saws,[2] and power-driven burs.[3] Hand saws, such as the nasal saws, make thin straight sections but tend to cut slowly and are tiring to use. Gigli's saws and high-speed burs cut rapidly but are more difficult to control and also tend to cause more hemorrhage than hand saws. Recently, a pneumatic reciprocating saw was introduced,** which is reputed to combine the facility of a power instrument with the fine cut of a hand saw in bone sectioning.

The purpose of this study was to evaluate the operating time and the amount of blood loss resulting from use of the Stryker saw to perform vertical osteotomies associated with surgical correction of mandibular prognathism.

Materials and Methods

A total of 26 operations was included in this study. In the first 13 operations, bone was sectioned with a #703 tapered fissure carbide bur mounted in a straight surgical air turbine handpiece.† A nasal saw was utilized to complete the final stage of the cut in order to minimize trauma to the underlying tissues. In the next 13 operations, bone was sectioned using the Stryker pneumatic reciprocating saw. In the coronoid notch region, a small convex blade (#1675.11) was used. This blade was self-limiting in the depth of its cut because of a flange at its superior border. In that portion of the mandible where the soft tissue on the inner surface was more easily protected by retraction, the section was completed with a larger straight saw blade. In all operations, the cuts were irrigated with copious amounts of 0.9% saline solution.

All operations were performed under nasotracheal general anesthesia. Approximately 2 ml of 1% lidocaine with 1:1,000,000 epinephrine was infiltrated subcutaneously at the site of the incision. The surgical procedure was essentially that described by Robinson and Hinds.[3] A 3-cm skin incision was made below each angle of the mandible, and the inferior border and lateral surface of the ramus of the mandible were exposed by sharp and blunt dissection. The mandible was then sectioned from the depth of the coronoid notch to the angle of the mandible, care being taken to stay behind the lingula. After both sides were cut, the mandible was repositioned and immobilized by fitting the teeth in a predetermined occlusal index. The posterior fragments of the rami, which overlapped the lateral surfaces of the anterior fragments, were secured with single stainless steel transosseous wires. The wound was then closed in layers and a pressure dressing was applied.

Each operation was performed by two of three oral surgery residents at the Naval Dental School; all procedures were supervised by two staff oral surgeons. Operating time, the interval between the first skin incision and the last skin suture, was recorded by the operating room nurse. Blood loss was measured by a staff anesthesiologist according to standard operating room technique. Aspirated fluid was collected in a calibrated glass bottle, and fluid removed by sponges was estimated as 20 ml per saturated 4 by 8-inch sponge. The amount of irrigation solution used was measured, and this amount was subtracted from the total fluid. The difference was recorded as blood loss.

Results

Results are shown in Table 1. Approximately 50% less blood was lost during operations where the Stryker saw was used than was lost during operations where high-speed burs and hand saws were used. This difference in blood loss was significant ($P<.01$ by "t" test). Three patients lost from 700 to 750 ml of blood. In each of these cases most of the hemorrhage occurred while the bone was being sectioned by burs.

Discussion

The Stryker reciprocating saw had an advantage over the air turbine in minimizing hemorrhage. Bleeding was considerably reduced when the bone was sectioned with the Stryker saw rather than with

*Doctor Marble's present address: Medical College of Georgia, School of Dentistry, Augusta, Georgia 30904.

**Stryker micro-reciprocating saw, No. 1675, Stryker Corporation, Kalamazoo, Michigan.

†Hall Air Drill (Surgairtome). Hall Surgical Systems Inc., Santa Barbara, California.

Table 1.—Blood loss and operating time of Stryker saw vs. cutting burs

Procedure	Blood Loss (Range) ml	Operating Time (Range) min
Stryker saw	200 ± 54‡ (100 — 300)	182 ± 22‡ (150 — 216)
Cutting burs plus hand saws	408 ± 190 (250 — 750)	190 ± 14 (175 — 215)

‡Standard deviation

cutting burs. The diameter of a bone bur is larger than the width of a saw blade, and in addition the bur tends to whip or wobble. More bone is destroyed during a cut with a bur than with a saw, and more bleeding results. The large amount of hemorrhage noted in some cases was attributed to penetration of the burs beyond the inner surface of the mandible. The high-speed burs readily lacerated soft tissue. This did not occur with the reciprocating saw, which only abrades soft tissues.

There was no significant difference in total operating time. The period devoted to sectioning bone was seldom more than 30 to 40 minutes with either method. Both techniques also allowed easy access and satisfactory vision.

It was necessary for the reciprocating saw blades to be sharp, to be operated at full speed, and to be accompanied with copious irrigation in order to cut effectively. Under these conditions the saw cut rapidly and accurately and was easily controlled.

This study was limited to vertical osteotomies of the mandibular rami. Additional comparative studies should be made involving other procedures associated with surgical orthodontia, such as Obwegeser's technique of intra-oral sagittal splitting.[4] The reciprocating saw is, however, an excellent bone-cutting instrument which effectively reduces blood loss.

Summary

1. Twenty-six cases of mandibular prognathism were surgically corrected, half, by standard procedures with a cutting bur, and half by use of a Stryker reciprocating saw. Blood losses and operating times of the two techniques were compared.

2. Average blood losses of 408 ml per operation with a cutting bur were reduced to 200 ml by use of the Stryker saw. There was no observable difference in operating time.

REFERENCES

1. Schaefer, J. E. Correction of malocclusion by surgical interference. Am J Orthodont & Oral Surg, Oral Surg Sect 27: 172, 1941.

2. Robinson, M. Prognathism corrected by open vertical subcondylotomy. J Oral Surg 16: 215, 1958.

3. Hinds, E. C. Correction of prognathism by subcondylar osteotomy. J Oral Surg 16: 209, 1958.

4. Obwegeser, H. The surgical correction of mandibular prognathism and retrognathism with consideration of genioplasty. Part I. Surgical procedures to correct mandibular prognathism and reshaping of the chin. Oral Surg 10: 677, 1957.

The following article is taken from the paper "Reconstructive Problems in Head and Neck Surgery" which was presented by the author in Japan at the November 1969 meeting of the Far East Chapter of the Society of Military Surgeons. Case slides from 23 cases of war injuries as well as cancer and congenital defects were also shown to illustrate the basic application of general principles in reconstruction to various problems, including total and partial nasal reconstruction, full thickness defects of the cheek and lips, cleft lip, orocutaneous fistulae and oral cavity reconstruction. The slides are not shown here.

RECONSTRUCTIVE PROBLEMS IN HEAD AND NECK SURGERY

*By LCDR J. A. Burnam, MC, USNR, Head, ENT Service, Naval Hospital in USS Repose**

Traumatic injuries of the face are as old as man and the treatment dates back at least to 600 B. C. In India, the custom, for centuries was to remove the nose of any person convicted of infidelity. Forehead flaps devised for their coverage were the earliest beginnings of facial reconstructive surgery. Very little more was achieved, however, until the 19th Century with the advent of Antiseptics and Anesthesia. These advances made possible the great stride made during World War I when trench warfare made facial injuries very common. An English Otolaryngologist, Sir Harold Gillies, was largely responsible for the advance of facial reconstructive surgery during this period, especially with his development and use of the tubed pedicle flap.

The treatment of acute injuries to the soft tissues of the face is preceded by evaluation and correction of airway embarrassment as well as hemorrhage and shock. In war injuries, other areas such as chest, abdomen, extremity, and head take precedence in the order of repair.

In reconstruction of the face, the same general principles apply as to other areas of the body, i.e., thorough irrigation of cavities, debridement of devitalized tissues, immobilization of the bony structure, and drainage or packing of any remaining dead space. The great blood supply to the face, however, allows for a conservative approach and much tissue can be salvaged for functional restoration.

Before soft tissue closure is attempted, it is imperative to establish a solid bony framework. Firm stabilization of the facial skeleton is usually achieved by interosseous wiring. Intermaxillary wiring for fixation of the upper and lower jaws is done where necessary. Preservation of nasal and oral airways must be achieved with reconstitution of a watertight cavity for speech and eating.

Very rarely are flaps necessary and skin grafts can be used for closure of most skin defects. In addition, proper dressings are quite important. Various stents, boluses, and fluff dressings are necessary for hemostasis and immobilization in the immediate postoperative period.

Basically, the task is, simply put, to return tissue to its original location. Quite often this is possible, especially if one is concerned only with the facial skin. Because of the great elasticity of the facial skin, there is usually much less actual loss of tissue than would at first appear. A small wound in the face may, however, be matched by huge losses of underlying muscle and bone. Short of primary closure, however, is the challenge of reconstructing or replacing avulsed or lost tissue, remembering, however, that replacement is only a *substitute* and can never be the same as that which was lost. Today, I wish to outline briefly some of the basic techniques used in reconstructive surgery of the face, and then to show some specific examples in surgical practice.

Wounds of the face are closed by one of two methods: (1) Primary Closure or (2) Transfer of Tissue. The latter is done by three basic techniques:

I. Local Pedicle Flaps
II. Free Skin Grafts
III. Distant Pedicle Flaps

I. *Local Pedicle Flaps*

A local flap is one which is shifted from its position to cover a contiguous defect. This flap may be either a rotation, advancement, or transposition flap.

*Dr. Burnam is now Instructor, Department of Otolaryngology, University of Miami School of Medicine, Miami, Florida 33152.

II. *Free Skin Grafts*

Free skin grafts may be either *split thickness, full thickness,* or *composite.*

Split thickness grafts, are best used on the face as a temporary covering as it will later show color difference from the rest of the face, presenting a patch-like appearance. Usually it is .012–.015 inches in thickness. Thin grafts have a better survival rate, but have the disadvantage of shrinkage.

Full thickness grafts, because of excellent color match, are very useful on the face. A take is, however, more difficult to achieve. The most common donor sites are the postauricular and supraclavicular areas.

Composite grafts, are those which combine two layers of skin with fat or cartilage between them. These are very useful in repairing the alar rim or the helix of the ear.

The successful transplantation of skin grafts is dependent upon the following:

a. Bed with good vascularity
b. Immobilization of the graft
c. Complete hemostasis
d. Asepsis

III. *Distant Pedicle Flaps*

A distant pedicled flap is one which is not contiguous with the defect. There are basically three types:

a. Lined Pedicle Flap
b. Tubed Pedicle Flap
c. Island Flap

1. *Lined Pedicle Flap* is the one which has its inner or raw surface lined with split thickness skin. This is useful when one is reconstructing full thickness defects. The split skin also serves to prevent some fibrosis and corresponding loss of blood supply in the flap itself.

2. *Tubed Pedicle Flap* is the one in which the margins of skin are turned inward to meet each other and sutured in this position; the flap takes on a tube appearance. The pancake at the end may or may not be lined with split thickness skin.

3. *Island Flap* is really a special type of distant flap in which there is no cutaneous connection between the flap and the defect. It is based on a major artery trunk and the corresponding subcutaneous tissue. It is usually transferred subcutaneously.

Generally speaking, some appropriate guidelines for the use of Pedicled Flaps are:

1. Flaps should be raised as close to the defect as possible. This reduces the number of steps to its destination, and, in addition, there is usually a better color match. The use of forehead, cervical, chest, and shoulder flaps is usually sufficient in dealing with almost any major facial defect.

2. The most important step in the use of distant flaps is in the planning and outlining of the flap itself.

3. An important principle to remember is to "work backwards from the defect." This is usually performed on the operating table, but may be done in the clinic in elective cases.

4. You will read that the length of the flap should not exceed its width. In the face, however, with its excellent blood supply, the length may be 2–3 times its width, and, indeed, in forehead flaps, it may be 4 times its width.

5. It is not necessary to delay most flaps of the face, however, this is not true for cervical, chest, and shoulder flaps which must be first raised and delayed for 14–18 days before setting into the defect. This period is, however, often utilized in lining the flap. Once the flap is set in, one must wait another two—three weeks before detachment.

Summary

In summary, I have tried to outline and illustrate a few of the basic approaches to reconstructive surgery about the head and neck. The same principles apply whether one is dealing with trauma, cancer or congenital defects. Reconstruction with function as well as cosmesis is the goal, remembering that one is dealing with substitute tissue and cannot expect perfection. Some basic rules of thumb are:

1. Limited debridement with preservation and conservation of tissue.

2. Membranous closure of oral cavity for purposes of eating and speaking.

3. Immobilization of the underlying bony structure.

4. The use of adjacent flaps, where possible, rather than distant flaps.

5. Careful planning and outlining of the procedure before beginning, remembering to work backwards.

6. Finally, remember that these are staged procedures and cannot be done quickly. Patience is a virtue. Remember the admonition that "he who reconstructs in haste, may repent in leisure."

NAVY MEDICAL DEPARTMENT BEGINS SHORT COURSE IN TROPICAL MEDICINE AT GORGAS MEMORIAL LAB

*By CDR Robert J. Kinney, MC, USN**

The Navy Bureau of Medicine and Surgery is now offering advanced studies in tropical and international medicine to its medical officers at the Gorgas Memorial Laboratory in Panama, R.P.

Attending the Course

The first of selected Navy medical officers to attend the course, from 30 January to 28 February 1970, were CAPT J. William Cox, MC, Assistant Head, Training and Clinical Branch, Bureau of Medicine and Surgery, Washington, D.C.; LCDR Robert L. Donnell, MC, Resident in Internal Medicine, Naval Hospital, St. Albans, Long Island, N.Y.; and LT Otto T. Nebel, III, MC, Resident in Internal Medicine, Naval Hospital, Philadelphia, Pa.

They were joined for part of the course by MAJ R.S. Drydin, MC, USAF, and MAJ Ensor Rodriquez-Lopez, MC, USAF—both Residents in Aerospace Medicine; Dr. Stephen I. Hegedas, a Resident in Internal Medicine at Gorgas Hospital; and Bruce McIntosh, a medical student from the University of Florida.

Course Curriculum

Following a briefing on the Laboratory's past and present accomplishments in health activities in Panama and other areas of Central and South America by the Director, Dr. Martin D. Young, the physicians began a heavy schedule of instruction about medicine as it is practiced in the tropics.

Emphasis was placed on the clinical approach. With the Chief of Clinical Studies, Dr. Carl M. Johnson, the students saw patients with a wide variety of illnesses at the adjoining Santo Tomas and Children's Hospital operated by the Government of Panama. Additional patients were examined daily in the clinic

*Officer in Charge, Navy Medical Science Unit, Gorgas Memorial Laboratory, Panama City, R.P.

Dr. Martin Young, Director, Gorgas Memorial Laboratory, discusses human malaria in monkeys during a session of the first Tropical and International Medicine course for U.S. Naval Medical Officers.

that is run by the laboratory and on working field trips to the interior where they had an opportunity to treat inhabitants of many small villages.

Much of their time was spent in the classroom where formal lectures and informal discussions were conducted by members of the Laboratory Staff on a variety of topics related to tropical medicine, including Human and Experimental Pathology, Immunochemistry, Serology, Epidemiology, Ecology, Virology, Bacteriology, and Parasitology. Additional laboratory instruction was given in the proper techniques of slide preparations for identification of the many parasites found commonly in warmer climates and on serologic and immunologic techniques which aid in the diagnosis of many disease states.

Additional trips were made to laboratory field stations to obtain first-hand knowledge of both insect vectors and animal host reservoirs of disease. The students observed how animals are trapped and insects collected and returned to the laboratory for examination and study.

In order to provide an opportunity to become familiar with a jungle environment, arrangements were made through LCOL Alfred K. Cheng, MC, USAF, Gorgas Memorial Laboratory staff, to attend classes at the Air Force Tropical Survival School at Albrook AFB.

Other activities in the Canal Zone included a briefing on the Panama Canal by Lieutenant Governor Richard S. Hartline and a talk on the Medical History of the Panama Canal by Health Director, Dr. H. Haskell Ziperman. The doctors also attended rounds at Gorgas Hospital and Palo Seco Leprosarium. Sufficient time was afforded them to visit many interesting and historical sites in Panama and the Canal Zone and to utilize numerous recreational facilities.

Address by Dr. Young

According to Dr. Young, few clinicians in the United States have had the opportunity, during training, to diagnose and treat diseases found primarily in tropic zones. With the presence of U.S. military personnel in tropical areas throughout the world it is particularly important that military physicians, specializing in certain fields such as Internal Medicine, be afforded an opportunity to gain intensive experience with tropical diseases, prompt diagnosis and proper treatment.

Most laboratories in the tropics, where such physicians can be sent, are primarily concerned with basic research, seeing patients during their acute illnesses only on a limited basis. Gorgas Memorial Laboratory, with its unique, longstanding association with the adjoining Panamanian Hospitals and patients in the small villages of the interior, plus its well known clinic, provides an unusual opportunity for a training program for clinicians.

This white-faced or organ grinders' monkey makes no bones about his fondness for peanuts. He is but one of many species of monkeys housed at the Gorgas Lab for research.

Surgeon General's Recommendation

The Surgeon General of the Navy, VADM George M. Davis, recognized this possibility when he visited Gorgas Memorial Laboratory last spring accompanied by RADM Calvin B. Galloway, MC, USN, (Ret), President of the Gorgas Memorial Institute of Tropical and Preventive Medicine, Inc., the parent institution of the Gorgas Memorial Laboratory. Admiral Davis recommended that such a program be offered as an elective course to interested resident physicians in advanced stages of training at Naval hospitals in the United States. Not only would this result in the dissemination of information to more medical officers, but would make the training programs more attractive to physicians. Such exposure

could be expected to permanently attract some doctors into the field of tropical medicine.

Historical Background

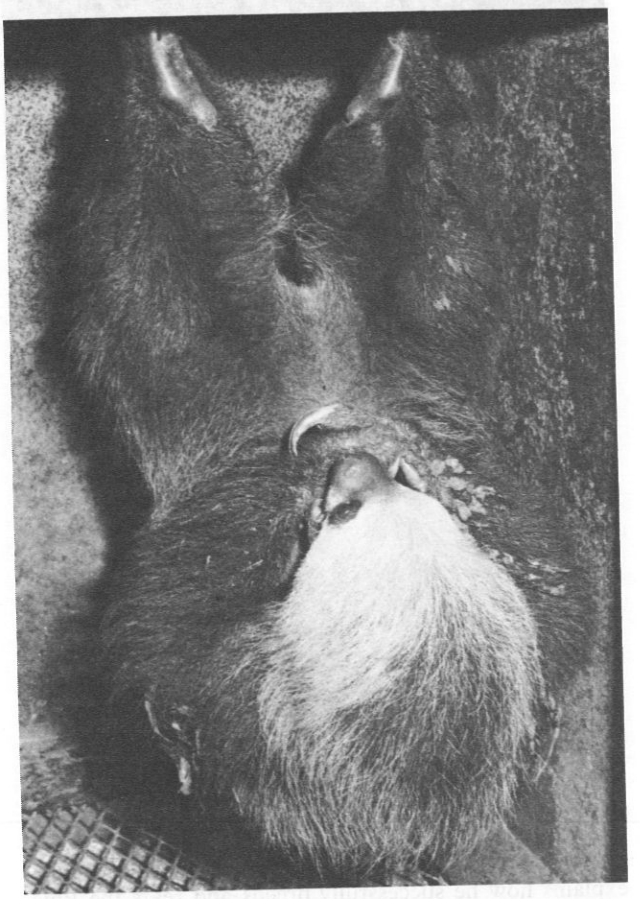
The Gorgas Memorial Laboratory is not a newcomer to this type of training. Medical students, interns and physicians from Panama have been participating in various programs offered by the Laboratory almost since its beginning. Students from medical schools in the United States have been coming here for two-month periods since the late 1950's through a program sponsored by Louisiana State University. Intermittently, since 1931, Navy Medical Officers, Medical Service Corps Officers and Hospital Corpsmen have served with distinction in research programs conducted at the Laboratory.

The Gorgas Memorial Institute of Tropical and Preventive Medicine, a private, incorporated, research organization with headquarters in Washington, D.C., was established in 1921 as a living memorial to General William Crawford Gorgas, MC, USA, for his outstanding accomplishments in the control of diseases. The main operating unit, The Gorgas Memorial Laboratory in Panama, R.P., was established jointly with the Government of Panama in 1929. Prospering since that time, it has contributed most of the new knowledge of tropical diseases developed in Panama during the past 41 years. A great deal of basic and applied information has resulted, much of which has been published in over 500 scientific papers.

Yellow Fever

Yellow Fever, the dread and often fatal disease which Dr. Gorgas eradicated from the Canal Zone, is still being studied by the laboratory. It is caused by a mosquito-borne virus and attacks the liver. It not only infects man but other primates as well. When conditions are right with a non-immune monkey population and the presence of a particular mosquito that

These owl-eyed fellows are called Aotis or Panamanian night monkeys. This species was the first New World monkey to be successfully infected with human malaria at the Gorgas Lab.



This two-toed sloth may hang suspended from the top of his cage for hours—to him it's comfortable. The Gorgas Lab studies the sloth, as the animal is believed to be a reservoir host for leishmaniasis—a tropical skin disease.

lives only in the treetops, an epidemic may sweep through the jungle and leave in its wake thousands of dead animals. Such epidemics have occurred in Central America, including Panama, several times during this century. It is possible that this same virus could reinfect a human population under certain circumstances. The watchful surveillance of the Gorgas Laboratory has reduced this hazard.

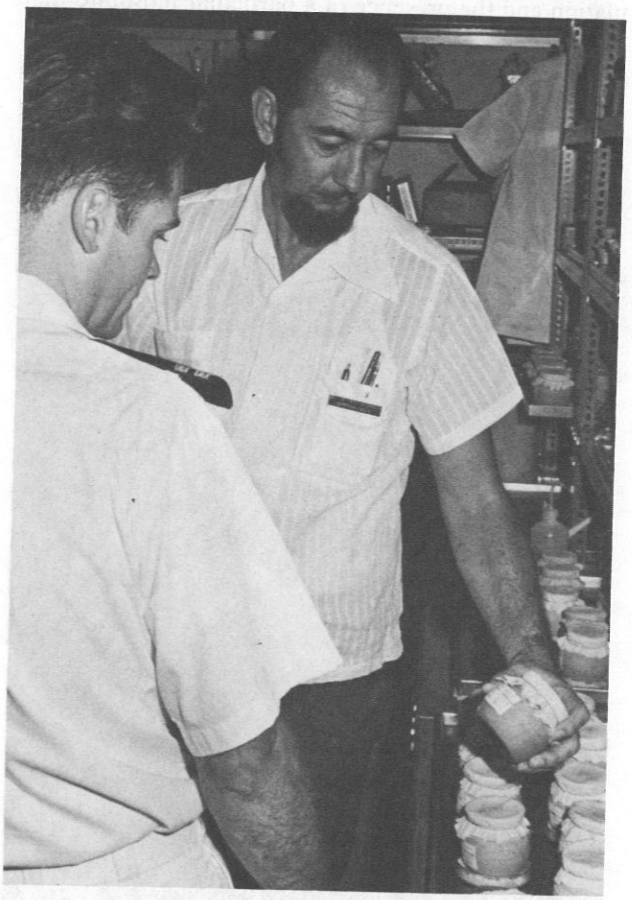
Malaria

Malaria, another common disease of the tropics caused by infection of red blood cells by a parasite which is also transmitted by certain species of mosquitoes, is also studied by the laboratory. Surveillance programs have been continued in small villages for years. Various eradication programs using antimalaria drugs, insect repellents and house spraying, now in common use, were studied first in Panama. Experimental studies demonstrated that human malaria in Panama can infect some species of New World monkeys and can be transferred back to man as well as to other monkeys.

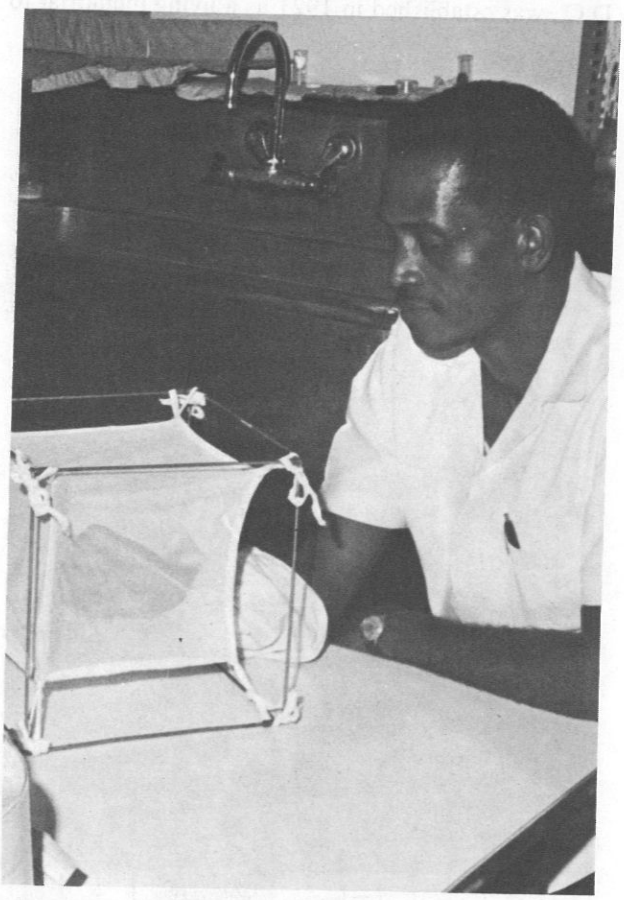
Leishmaniasis

A common skin disease of the tropics, called leishmaniasis, is caused by a tiny parasitic organism which attacks exposed areas of the skin producing large ugly ulcerations; untreated lesions usually become secondarily infected and difficult to cure. Destruction of parts of the ear and involvement of the mucous membranes of the nose, mouth and throat may result. Doctors at the laboratory have conducted extensive drug trials and have successfully treated hundreds of cases during the past few years.

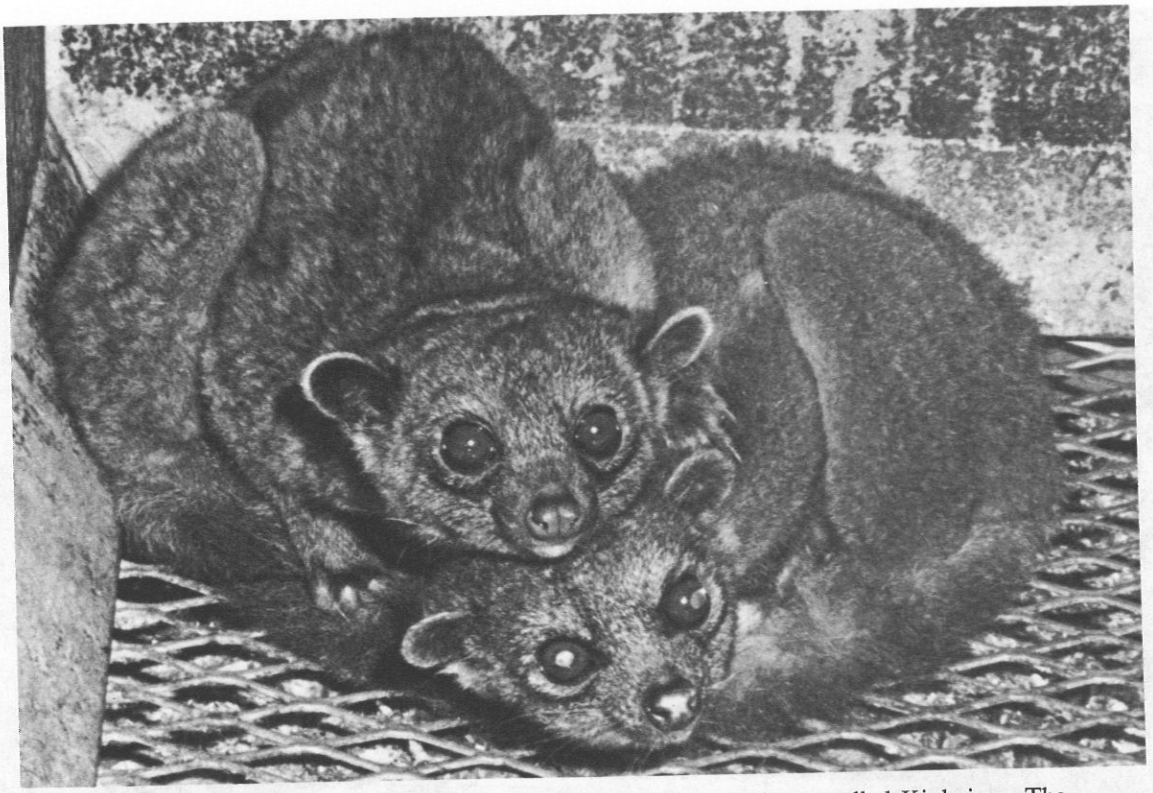
The organism is difficult to grow in culture but with newer methods developed at the lab the recovery rate has been quite high, resulting not only in



Dr. Howard A. Christiansen, of the Gorgas Lab staff, explains how he successfully breeds and rears the Phlebotomus Sandfly. The small, earthen jars provide just the right environment for brooding. The Gorgas Lab is one of the few laboratories in the world where such sandfly colonies have been successfully raised.



Feeding time for Phlebotomus Sandflies which transmit leishmaniasis. This Gorgas Lab staff member allows a few sandflies to feed on blood from his hand. In order for certain species to breed, one meal of human blood is required.



Unknown to most North Americans, these furry little animals are called Kinkajous. The tiny parasitic organism which causes Leishmaniasis has been cultured from healthy appearing skin of these animals.

The author shows how the Gorgas Lab raises cone-nosed or "kissing" bugs. This insect carries Chagas' Disease.

Administration building of the Gorgas Memorial Laboratory located on Ave. Justo Arosemena in Panama, R.P.

more knowledge about the parasite, but also in the discovery that the parasite can commonly be cultured from the healthy appearing skin of a large number of animals that are infected in nature, such as the sloth, the kinkajou, the porcupine and various species of rats.

The organism is transmitted by certain species of Phlebotomus Sandflies which bite animals and man. Most of the 70 or so species found in Panama have been described at this Laboratory. And because this is one of the few places in the world where sandfly colonies have been successfully raised, experimental transmissions are attempted and the characteristics of the infection in the insect are studied.

Trypanosomiasis

Still another parasite which can invade the bloodstream of man and certain animals is the trypanosome which, under the microscope, appears elongated with a whip-like appendage at one end. Certain species are non-pathogenic to man, but one species, which occurs predominately in Central and South America, can cause a serious affliction in man called Chagas' Disease, so named for its discoverer in Brazil. The infection can cause acute or chronic inflammation of the heart with a significant number of deaths.

The first human cases in Panama were described by physicians from the laboratory over 35 years ago and since that time hundreds of additional cases have been studied. The disease occurs also in animals living in proximity to man and many of these have been shown to have active infections when brought to the Laboratory and studied. The insect vector, which is called a cone-nosed or "kissing" bug, comes out at night and may bite on exposed surfaces, such as the face, while the victim is sleeping. These insects are raised in the laboratory for study.

Miscellaneous Diseases

The diarrheal diseases constitute a major public health problem throughout the world and particularly in the tropics. The prevalence and causes of these diseases are being studied both in man and reservoir hosts by the Laboratory.

Studies have also been done on Rickettsial Diseases in Panama with the reporting of the first cases of Rocky Mountain Spotted Fever, Murine Typhus and "Q" Fever.

Besides Yellow Fever, many other virus diseases occur in Panama which, though usually not quite as serious, do cause fatalities. Surveillance studies in human and animal populations are being done and five previously unknown viruses have been isolated. Through surveys it has been shown that almost 20 percent of viruses known to be carried by insects occur in Panama.

Panama has a very large animal, bird and reptile population and, because many of these species have been shown to have significance for some of the diseases transmissible to man, a reference collection of specimens has been established—including all the varieties of poisonous snakes.

Support of the Gorgas Laboratory

Support of the Laboratory comes from a variety of sources, including the Government of Panama, contributions of the United States Government and research grants and gifts of private individuals. It is located on Avenida Jose Arosemena in Panama and is comprised of four buildings: administration, animal, research and insectary. The latter has a valuable reference collection of insects with about 1,500 species and over 200,000 specimens.

Since its beginning Gorgas Memorial Laboratory has offered its facilities to visiting scientists who remain from a few days to several years. More than fifty investigators, including many prominent leaders in parasitology, entomology and tropical medicine, have been guests of the laboratory. Staff members have come from throughout the world.

When the Laboratory was being planned the Government of Panama donated sufficient land and the original (administration) building, and has continued to assist the laboratory. The United States Government authorized a permanent annual appropriation for maintenance and operation.

During the original hearings on January 20, 1928, before the Committee on Foreign Affairs, House of Representatives of the Seventieth Congress of the United States, a statement was made by a very prominent physician, Dr. Bowman C. Crowell, of Chicago, Ill., then associate director of the American College of Surgeons.

He said: "It is planned that the Gorgas Memorial Institute of Tropical and Preventive Medicine will form a center for research at which will be welcomed students from all countries, and that it shall form a center for the dissemination of already existing knowledge and that which may result from its researches. The importance of this in the training of medical officers for our Army, Navy and Public Health Service, to say nothing of lay physicians, cannot be estimated in dollars and cents."

It is fitting then that the Gorgas Memorial Laboratory should again enlarge its role by making their facilities and knowledge available to Navy Medical Officers.

THE GASTROENTEROLOGIST CORNER— INTESTINAL ABSORPTION AND MALABSORPTION

By CDR Alfred R. Chappelka, Jr., MC USN, Gastrointestinal Branch, Medical Service, Naval Hospital, Philadelphia, Pennsylvania

In the past two decades the study of absorption and malabsorption has rapidly advanced, with the literature containing excellent individual articles and reviews. There are still numerous voids but enough facts are now known that one can have a rational physiological approach to the patient with absorption difficulties.

Malabsorption can be defined as an abnormal net transfer of substrate from the intestinal lumen into the body, but in a broader sense malabsorption describes not only a decrease in absorption of exogenous material, but also an increase in loss of endogenous substrates into the gut lumen. One could also state that increased absorption is malabsorption, but by convention this type of defect is not included, thus eliminating from the definition such disease states as Vitamin D intoxication, hemachromatosis and Wilson's disease.

It is the purpose of this review to cover briefly the basic physiology involved in digestion and absorption

of fat, carbohydrate and protein. This will be followed by a discussion of some of the defects that can cause malabsorption and the tests used to confirm the clinical impression.

Fat Absorption

The hallmark of malabsorption is steatorrhea. Digestive and absorptive mechanisms of fat apparently being in more delicate balance than that of carbohydrate or protein are therefore the first to falter when disease affects the gastrointestinal tract.

Dietary Intake

The "average American diet" ranges from 50–150gms of fat per day; predominantly in the form of long chain (ten or more carbons) triglycerides. The animal fats are solid and saturated, and consist mainly of palmitic (C–16:0) and stearic (C–18:0) acid; the vegetable fats are liquid and unsaturated, and consist of oleic (C–18:1) and linoleic (C–18:2) acid.

Digestion and Absorption

Long chain triglycerides, fatty acids and monoglycerides, being non-water-soluble require special digestive and absorptive processes as opposed to carbohydrates and proteins, whose basic building blocks are water-soluble.

1. *Intraluminal phase*

a. *Emulsification:* After ingestion lipids are partly emulsified in the stomach by coordinated gastric contractions. Slowly the gastric contents are passed on into the duodenum where bile salts and lecithin help stabilize the emulsion. While in the stomach as much as 10–15% of the fat can be hydrolysized by lipolytic enzymes derived either from the stomach or by regurgitation from the duodenum.

b. *Pancreatic Lipolytic Enzymes:* There are three pancreatic lipolytic enzymes. The predominant one splits the alpha ester bonds of triglyceride leaving fatty acids and 2-monoglycerides. The 2-monoglycerides for the most part stay intact but are capable of isomerization to the alpha position and hence subject to lipase lipolytic action. There is also a specific enzyme which in the presence of bile salts is capable of hydrolysis at the 2 or β position. The third enzyme phospholipase, hydrolyzes phospholipids and converts lecithin to lysolecithin, a detergent. The final end products are predominantly fatty acids, glycerol and 2-monoglycerides. The fatty acids and monoglycerides are insoluble in the water medium of the intestinal contents, consequently a carrier mechanism must be used to transport the products from the lumen to the absorptive cell surface. This is the role of bile salts.

c. *Bile Salts and Micella:* The gallbladder containing bile salts, cholesterol and lecithin, empties its contents with the stimulation of a fatty meal. The bile salts are lipid-soluble steroids with a water-soluble radical of either taurine or glycine. They are thus detergents, and above a critical concentration, form polymolecular aggregates called micella. The water-insoluble fatty acids and monoglycerides are soluble in the interior of the micelle. The half-life within the micelle is extremely short, but by rapid random passage from one micelle to another the mucosal surface is reached, where, it is proposed that, the micella become attached to the surface of the microvillus. Nonpolar substances such as cholesterol and the fat-soluble vitamins are poorly carried by micella, but their solubility is greatly facilitated by simultaneous transport of fatty acids and monoglycerides.

2. *Cellular Membrane Phase*: Most absorption takes place in the distal duodenum and proximal jejunum. At the absorption surface of the mucosal cell, the fatty acids and monoglycerides must be transported across the membrane. The mechanism by which this is accomplished is little understood but known to be passive, not requiring energy. Pinocytosis has been suggested as a means of transporting fatty acids, monoglycerides, and triglycerides. Even though this phenomenon has been seen microscopically, it is generally felt that its contribution is negligible.

3. *Intracellular Phase:* Within the cell the 2-monoglycerides, fatty acids, and glycerol are re-esterified to triglycerides. Coating of the triglyceride with protein, cholesterol, and phospholipid completes the intracellular phase and the newly formed chylomicron is extruded from the base of the cell.

4. *Transport:* The chylomicrons enter the lymphatics, are carried to the thoracic duct, and then on to the general circulation.

5. *Enterohepatic Circulation of Bile Salts:* The micellar structure (bile salts), after completing its mission, travels down the intestinal tract to the distal ileum where it is actively and effectively absorbed. The estimated fecal loss of bile salts is only 2% per day. The entire bile salt pool is approximately four gms, with a daily synthesis in the liver from cholesterol with conjugated glycine or taurine of 200–300mg, thus keeping pace with the fecal loss. It

is estimated that the four gms of bile salts are recirculated twice during each meal.

Defects in Digestion and Absorption

Once the normal pathway has been appreciated it is possible to conceive of defects which would alter the orderly framework and thus possibly lead to less than optimum performance with resultant steatorrhea. There is no evidence that emulsification is necessary as attested to by the fact that patients with subtotal gastrectomy or gastric motility alterations need not have evidence of malabsorption.

Deficiency of lipase can cause steatorrhea. This can result from pancreatic defects such as chronic pancreatitis and cystic fibrosis, or ineffective lipase activity due to altered duodenal pH from the optimum of 6.3, because of excess HCl or decrease in bicarbonate from the pancreas. It should be noted that even without any lipase, 50–60% of a normal fat load can be absorbed.

Either a decrease in bile salts such that the critical micellar concentration can not be obtained or other factors which interrupt the enterohepatic circulation are capable of producing steatorrhea. Examples most often noted are deconjugation of bile salts by bacteria in the small intestine, ileal resection or disease eliminating the re-entry route, and liver disease such as obstructive jaundice which also interrupts the cycle.

There have been no reports of selective membrane impermeability to lipids on a congenital basis but there are numerous conditions in which the mucosal surface is altered causing alteration in absorption. The classical examples are celiac disease and tropical sprue.

There are no known defects of re-esterfication of triglycerides but the classical intracellular defect is that of a-beta-lipoproteinemia in which no chylomicrons are formed, due to absence of the essential lipoprotein. The mucosal cells become saturated with lipids and steatorrhea follows.

The last site contributing to fat malabsorption is a transport defect as occurs in diseases where lymphatics are blocked, such as in lymphoma and intestinal lymphangiectasia. The unabsorbed fat is eliminated in the stool.

It has been stated that it takes more than one defect to cause steatorrhea. This may well be true so that in steatorrhea of pancreatic insufficiency the lipase may exist in low concentrations, the decreased concentration of bicarbonate may not neutralize the acid, causing unfavorable pH for enzyme activity, and often there is associated liver disease which might alter the bile salt pathways. Regional enteritis likewise causes multiple defects in that there can be involvement at the terminal ileum, site of bile salt absorption, and there often is stasis with bacterial bile salt deconjugation.

Laboratory Tests

From a clinical laboratory viewpoint there is lack of a good procedure to measure abnormalities of digestion and absorption. There are no tests to distinguish between intraluminal digestive lipolysis and those of impaired absorption. Studies mentioned in the literature include the quantitative fecal fat determination, microscopic stool examination with Sudan stains, I^{131} Triolein test, I^{131} oleic acid serum chylomicron count, serum cholesterol, Vitamin A tolerance test, etc.

Most of these tests have deficiencies in practical clinical use. Probably fecal fat determination is the best test for steatorrhea. Unfortunately difficulty is often experienced in finding a laboratory that will do the determination.

Perhaps the most easily managed procedure is simply to weigh stool specimens. The upper limit for normal is 250gm/day. The correlation between stool fat and weight is not necessarily good but weights over 250gm usually do signify steatorrhea.

(To be concluded in the June issue of the Medical Newsletter.)

AN EVALUATION OF THE TISSUE CONDITIONING MATERIALS

By CDR Wallace D. Loo, DC, USN, Dental Service, Naval Hospital, Philadelphia*

The literature suggests many supplemental uses for tissue conditioning materials. Frisch, Levin and Bhaskar demonstrated use as a periodontal dressing following surgery.[1] A case report recently described the use of tissue conditioning material with a vinyl splint to control hemorrhage in a hemophiliac following extraction.[2] The author has suggested a method of conditioning the tissue and preserving the alveolar ridge following complete mouth extraction utilizing an immediate treatment denture and tissue conditioning materials of different consistencies.[3] The use of the material in developing a dynamic impression of the velopharyngeal area in maxillofacial prosthetics has proven invaluable. Surgically, the soft liners have been used in conjunction with surgical stents and obturators to manage oral antral openings, ridge extension cases, and areas of surgical excision involving chronic hyperplastic tissue. In a recent study to evaluate the sterile properties of impression materials, the tissue conditioning materials tested appeared to be highly effective in preserving aseptic operating room conditions when an accurate impression of a surgically prepared area is desired, for prosthetic replacement.[4]

The use of these materials as an adjunct to accomplish tissue recovery as suggested by Lytle has proven highly successful.[5] The convenience of accomplishing tissue recovery without complete removal and total abstinence of the prosthodontic appliances has led to widespread use, and unfortunately, abuse of these materials. Often, no preparation or correction of the obvious faulty conditions is made and recovery is expected to result from merely lining the untouched appliances. Occlusal discrepancies and incorrect registrations cannot be corrected by the use of these liners alone. In some cases where the denture adaptation is extremely poor, and the occlusal discrepancies minor, it may be possible to attain a proper repositioning of the appliances. In these cases, however, this repositioning is possible only with the use of a thick, bulky lining which can only add to the instability of the appliance. Any obvious problems in occlusion and registration must be corrected before the effective use of the soft lining materials can result.

Another common oversight is the lack of preparation of the tissue bearing areas of the appliances to ensure a uniform thickness of the lining material. In these areas of inadequate or no relief, the lining material will not provide the necessary resiliency required for tissue recovery. Adequate bulk of the material must be attained. Any areas in which the lining material appears thin should be reduced and new material should be added until sufficient thickness is present.

Perhaps the greatest abuse is the failure to change these liners at frequent intervals. All of the soft tissue conditioning materials are basically acrylic in nature with a retarder or plasticizer added. In all cases, the retarder will eventually leak away leaving a distorted lining of destructive, ill-fitting, hard acrylic. The frequency of change required will depend on the severity of distortion and the extent of involvement of the underlying tissues. Generally, the greater the tissue involvement, the more frequently the liners must be changed.

The consistency and stability of the individual lining materials also vary. The operator should be familiar with the several different types of soft liners available and utilize the liner best suited for his needs. Some materials are designed for short term use, to be changed every three to four days. Others possess a much firmer consistency, remain stable over a longer period and need not be changed as frequently. In all cases, the material should be considered a temporary liner of short duration, should not be left beyond two to four weeks without changing, and should be examined at weekly intervals to determine its consistency.

Most manufacturers do not claim any bactericidal effect from the soft liners, although some of the materials are reported to contain antifungus agents. Due to some of the common retarding agents used, such as alcohol and eugenol, some antiseptic action can possibly be ascribed to the soft liners. However, the material probably achieves favorable effect through its close adaptation and resiliency. The flow of the material in its early setting stages allows it to intimately contact the underlying tissues. This close adaptation restores the stability of an otherwise loose-fitting irritating denture. The resiliency of the material further promotes tissue recovery by physiological stimulation and massage of the underlying tissues.

The opinions or assertions in this paper are those of the author and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.

*Head, Prosthodontic Section, Naval Hospital, Philadelphia, Pennsylvania.

The material, however, will not flow continuously to accommodate the tissue changes that are taking place. Neither will the material remain resilient for a long period of time. In order for the tissue conditioners to remain physiologically compatible with the process of tissue recovery, they must be replaced frequently with new liner material.

Summary

The success of the tissue conditioning materials has led to greater use and diversity of the material. With increased use and acceptance of the soft liners, there will be a tendency to neglect and vary certain procedures. It is the responsibility of the dentist to be thoroughly familiar with the material he selects and to evaluate any other suggested uses. The effectiveness of the soft lining materials is based mainly on ability to flow, adapt and remain resilient. The plasticizing agents responsible for these favorable properties will eventually leak away leaving an undesirable lining capable of irritation and destruction of the underlying tissues. The liners are to be regarded as temporary in nature. They must be changed at regular intervals and eventually replaced with a hard material, or perhaps a somewhat more stable silicone soft liner.

BIBLIOGRAPHY

1. Frisch, J., Levin, M. P., and Bhaskar, S. N.: The Use of Tissue Conditioner's in Periodontics. J Periodont 39: 359, 1968.

2. Fiedler, L. D., Frisch, J., et al.: Vinyl Splints with a Tissue Conditioner in Hemorrhage Control: A Case Report. J S Calif State Den Assn 36(2): 54–57, Feb 1968.

3. Loo, W. D.: Ridge Preservation with Immediate Treatment Dentures. J Pros Dent 19: 5–11, 1968.

4. Loo, W. D., and Butler, L. M.: A Study on the Sterility of Impression Materials. Dental Service, Naval Hospital, Philadelphia, Pennsylvania (to be published).

5. Lytle, R. B.: The Management of Abused Oral Tissues in Complete Denture Construction. J Pros Dent 7: 27–42, 1957.

ABSTRACT PAPERS

IMMUNIZING AGENTS IN PREGNANCY

In a recent release from Norman A. Schorr & Co. for THE MEDICAL LETTER of March 6, 1970, it is reiterated that women known to be pregnant should not be subjected to routine immunizations with live virus vaccines since these may infect the fetus. Immunization of other women of childbearing age should be delayed if it is necessary to determine whether the woman is pregnant.

"Since many women are not aware they are pregnant until several weeks have elapsed," The Medical Letter says, "before administering a live virus vaccine to a woman of childbearing age, the physician should ask her whether pregnancy is possible or have a pregnancy test performed."

Such precautions are applicable to live virus vaccine immunization against smallpox, mumps, measles, German measles and yellow fever. It is reported that killed or inactivated vaccines against influenza, epidemic typhus, typhoid, tetanus and diphtheria toxoids are generally considered safe. Rabies vaccine, antiserum killed cholera vaccine and attenuated live oral polio vaccine or killed injectable polio vaccine may be given when protection is required.

The recommendations are based on reports of the Advisory Committee on Immunization Practices of the Public Health Service and of the Committee on Infectious Diseases of the American Academy of Pediatrics, as well as on the recommendations of the publication's consultants.

TUBERCULOUS OSTEOMYELITIS OF THE MANDIBLE

G. M. Weidmann and A. J. MacGregor, Oral Surg 28: 632–635, November 1969.

There have been a number of reviews of the literature concerning tuberculosis of the mouth, a well-recognized clinical condition. In the case reported, oral manifestations drew attention to the general condition. On October 12, 1967, a 22-year-old East African Indian man was referred to Leeds Dental Hospital, because local treatment for a periodontal abscess of 4 weeks' duration had been unsuccessful. There was no significant medical history. The lower right second molar was loose but free of caries; pus exuded from the periodontal margin, there was a radiolucent area around the distal root apex, and the shadow of the periodontal membrane was abnormally wide. On the day of examination, the tooth was extracted

under local anesthesia. The patient returned 10 days later with a submandibular abscess. This was incised externally, a drain was inserted, and a course of intramuscular penicillin was instituted. The patient did not respond to penicillin or to subsequent tetracycline therapy. Although the responsible organism was not identified, the available evidence seemed to favor a diagnosis of tuberculosis. A daily regimen of streptomycin was therefore initiated, and the condition responded rapidly. The foregoing case is of interest in that a chronic infection which began around a tooth developed into chronic osteomyelitis of the mandible despite surgical and antibiotic treatment. The osteomyelitis remained uncontrolled until specific treatment was afforded. The diagnosis was supported by the patient's dramatic, rapid and permanent recovery.

(Abstracted by LCDR R. A. Murphy, DC, USN.)

CASUALTY EVACUATION CONTROL

Efficient distribution of casualties is one of the keys to effective utilization of military medical support resources. Timely evacuation to a medical facility appropriately staffed, equipped and ready to render care is of supreme importance to many casualties; none of these factors are of great importance to the military outcome of the engagement. It is probably this latter fact which has so long delayed the development of an efficient casualty evacuation control system.

Much improvement has occurred since the debacle at Manassas Creek during our Civil War. Evacuation plans and modalities were so scarce that relatives of Union troops from as far north as New England traveled to Washington to search the Bull Run battleground for their casualties. In World War I radio was in its infancy and many ambulance services were operated by charitable rather than military organizations. Front line units could rarely be alerted to casualty overloads in a real time frame; extensive use was made of messenger service; field telephones and telegraphs were few and switching arrangements primitive. Although specialty hospitals were established, evacuation was long and slow and utilization of specialty facilities was rarely related to any particular assault.

World War II in the Pacific was characterized by a series of sharp assaults against heavily defended islands. Adequate time was usually available to plan for and provide special medical facilities for these operations. In general, during the initial assault, definitive surgical facilities were limited to fleet elements and effective distribution of surgical casualties became a major problem. The scheme usually adopted was to signify casualty receiving ships by flag hoist (the "Mike" flag). When a given ship had reached capacity, the "Mike" flag was hauled down—or—in some operations—"Negat Mike" was flown. Casualties were assembled at a beach evacuation station, loaded aboard returning landing craft and transported to casualty receiving ships. Except for Okinawa, hospital ships were not available during the early assault phases. While this scheme may seem reasonable (in the absence of helicopters), its execution frequently left much to be desired. The number of islands on which a direct run to the beach was possible were few; in most instances there was a reef, coral shelf or long stretch of shallow water to be negotiated. Such barriers were manifestly impossible for the wounded to negotiate; they were loaded into amphibious tractors or swimmable trucks (DUKW's), transported to the edge of the barrier, and transferred to boats for the run to off-shore shipping. In some operations a "casualty control officer" was located at this transfer point in a "medical boat"; he attempted to examine the patients and gave instructions to the boat coxswain. Unfortunately, many of the operations orders specifically forbade diversion of returning landing craft; they were instructed to return directly to the ship they were unloading. This meant further transfer, by first available boat, from that ship to some other ship flying the "Mike" flag. In some operations an attempt was made to compensate for these long delays in definitive treatment by placing surgical teams on LST's scheduled for early unloading; thus, if the casualty evacuation control officer determined that an outcoming "Amphtrac" or "DUKW" had critical patients aboard, he could redirect them to the relatively nearby LST for emergency treatment and subsequent transfer.

The picture was further complicated by the fact that transfers of patients at reef-edge often by-passed the casualty control point; and radio was rarely available to the casualty control officer. Knowledge of conditions aboard the receiving ships was limited to visual sightings of the "Mike" flags and handwritten messages delivered by boat coxswains. As a result, in most operations, the casualty receiving ships closest to the beach received severe overloads during the

early stages of an assault while surgical suites in vessels further out were under-utilized or—in some cases—idle. The casualty control officers were young medical officers, often assigned at the last moment to this task, unskilled in ship recognition, sometimes unaware of the ship disposition plan and usually unaware of changes thereto. They did not control the boats nor did they know the casualty load buildup on the ships of the fleet. They could maintain running tallies of the patients they had dispatched and they were relatively sure that the few designated ambulance boats had delivered patients as directed. They did not know how many patients had been processed by controllers on adjoining beaches, nor could they be certain that patients tagged for certain ships, but deposited at the boat's mother ship, had in fact been retransferred as recommended.

Helicopter evacuation and modern communications equipment have eased the problem of casualty evacuation control but by no means alleviated it. In contrast to the situation at Bull Run, patients now evacuated from Viet Nam have "confirmed tickets" for specific beds in specific hospitals in the Pacific rear areas or Continental United States. Availability of a bed with appropriate specialty care is guaranteed the patient, and this bed is as close to his home as possible. Patients on the battlefield are usually evacuated by helicopter and their destination determined while airborne. This is possible at all times with Army ground forces because of their system of helicopter ambulances; it is usually possible for Marine ground forces. Since the Marines have fewer helicopters assigned the ambulance mission, there are times when patients must be dropped at the "first available" facility. For the past year a provisional casualty evacuation communications center has been operated at III MAF which has done much to prevent the overloading of "first available" facilities.

The problem of the sea-shore interface has not been fully resolved. Present amphibious "doctrine" is closely patterned on World War II practices. Viet Nam amphibious assaults, although numerous, have been limited in size and rarely offered multiple casualty receiving ships in support; the distribution problem rarely arose. Studies are in progress and an early conference is planned to critically examine doctrine. The problem will be eased by the greater availability and reliability of communications equipment over World War II days; it is complicated by the very complex helicopter control problems incident to a ship-to-shore movement (which may include shifting of the helicopter direction function from shipboard control centers to a shore control center).

Since the patient wounded severely enough to be evacuated rarely returns to action during the initial acute assault phases, the problem of patient distribution is not a crucial one to the commander. It may be crucial to the patient. Although the mission of military medical forces is clearly to maintain maximum numbers of combat-effectives for the commander, today's technology makes it possible to accord increased attention to those wounded in action. Effective casualty evacuation control may be of vital importance to our individual wounded and its successful implementation must be urged at every level. It is one of the few opportunities available to inject a humanitarian aspect into the ugly business of war.—Code 75, BuMed.

AEROMEDICAL EVACUATION*

Military surgeons have at their disposal a highly sophisticated, complex transportation system for rapid patient movement. An understanding of the advantages, limitations, and potentiality of this system must be made available to all medical personnel.

The judicious use of aeromedical evacuation markedly reduces the time lapse from injury to definitive care. The decision to evacuate the patient by air to the next level should be made with full knowledge of flight schedules, lag times and care at each stage in the chain of evacuation. Every effort should be made to reduce the workload within the system to the essentials required for good patient care. The flight attendants should not be burdened with unnecessary dressing changes, topical medications, special diet, or other procedures which would detract from the care of the more seriously injured patients. The physician at the originating hospital should assure himself that the patient is ready to withstand the contemplated trip. Although the patient will be monitored by other physicians, it should not be assumed that they will have opportunity to fully evaluate the patient enroute. Physicians are reminded that patients with oxygenation or pulmonary function problems at ground level may be expected to have increased difficulty at high altitude.

* Taken from proceedings of CINCPAC Fourth Conference on War Surgery, February 1970.

Preferably, patients should meet the following minimum criteria for routine aeromedical evacuation:

1. Stable hematocrit of 35% and a hemoglobin of 11 grams per cent.

2. Stable vital signs.

3. No active bleeding.

4. Adequate hydration.

1. *General Data*

A. Under normal conditions the patient is transferred to the Aeromedical Staging Flight for evacuation. Usually within 24 hours the patient is placed aboard an aircraft for movement to the next echelon. At the destination, the patient is again processed through the ASF and then transferred to the destination hospital within 24 hours. Depending on the destination hospital, this movement may be made by ground or helicopter transportation.

B. Patient designation to PACOM (Pacific Command) or to CONUS (Continental U.S.) hospitals is the responsibility of the treatment facility in Vietnam within the guidelines established by the three services. Patient destinations within PACOM and CONUS are normally determined by a joint regulating office (JMRO [Joint Medical Regulating Office, outside U.S.] or ASMRO [Armed Services Medical Regulating Office, within U.S.]) and not by the various casualty staging units. Patients may be removed from the evacuation system *at any* port enroute when it is the *professional opinion of the evaluating surgeon* that patient safety will be compromised by continued movement, whether by surface or air. Once the decision is made to remove a particular patient from the evacuation system, the destination hospital is notified through JMRO or ASMRO by the aeromedical staging facility concerned. This is essential to avoid unnecessary delay in notifying relatives and medical personnel at the destination facility. The current aircraft utilized for long range, high altitude transfer is the C–141. It is pressurized to maintain a cabin altitude of 6,000 to 8,000 feet. When utilized for medical evacuation, it is configured to provide litter capability and has individual patient oxygen support as required. Combinations of ambulatory and litter patient transfers are normally arranged for approximately 60 patients per flight. Higher numbers are possible; however, when more than 30 to 40 litter cases requiring nursing attention are placed on one mission, an augmentation of the normal two-nurse, three-to-four-technician team may be desired.

2. *Special Problems*

A. *Tracheostomy care*: Tube should be of proper size and changed prior to placement in the evac system. When Byrd respirators are to be used the tube should be cuffed (doubled if desired). Due to the low (10%) humidity of aircraft cabin atmosphere, the use of some humidification device is recommended to avoid the production of dry mucous plugs and to insure proper tracheal care and toilet during flight.

The use of tubes for tracheostomy that do not have cleaning cannulae should be avoided. It is essential that mucous plugs and encrustations be removed promptly to avoid respiratory distress and obstruction. Rubber and plastic tracheostomy tubes do not normally have cleaning inner tubes or cannulae. The periodic instillation of two milliliters of sterile isotonic saline solution into the tracheostomy with proper aspiration enhances the cleaning of the airway.

Note: Patient should not be transported with endotracheal tubes.

B. *Chest tubes*: Chest tubes may be left in position during evacuation but should be equipped with functioning valves such as the Heimlich valve. Chest X-rays should be taken and interpreted just prior to patient movement. Preferably, the patient should not be evacuated by air within 72 hours after removal of the chest tube.

C. *Nasogastric Tubes*: All patients requiring nasogastric suction at ground level should have such protection during flight. The combination of the basic medical problems, air swallowing due to anxiety and pain, and the reduced barometric pressure at altitude could result in difficulties. Abdominal pressure under a cast, pain from distention of hollow viscera, and most importantly, vomiting with aspiration and serious pulmonary complications could result.

D. *Urinary Catheter Care*: Indwelling catheters in use prior to transfer should be left in place during transfer. Instructions for specific care enroute (both staging areas and in flight) must be provided for the medical teams along the route.

E. *Intravenous catheters*: Patients requiring intravenous catheters for fluids during flight should have them replaced within 24 hours of evacuation and the date noted. These catheters should be left in position only for a maximum of 48 to 72 hours.

F. *Cerebral spinal leak*: A wound draining cerebral spinal fluid at ground level will drain slightly faster at higher altitudes. These wounds *are not* a

contraindication for transfer if such is indicated for other reasons.

G. *Cranial tongs*: Special attention should be paid to the proper seating of the tongs. Traction must be maintained by a closed system, preferably with the Collins' spring. In the absence of a spring device, traction may be maintained by heavy rubber tubing tied to the litter frame. Weights, hanging free, must not be left attached during flight to prevent sudden jerking upon the tongs.

H. *Stryker frame*: Portable frames are available for long distance transfers by air. Patients will be turned during transfer *as ordered by the referring surgeon.* Tall patients require the extra length Stryker frame.

I. *Skin traction*: Stockinette glued to the skin can be utilized to maintain traction during evacuation. The stockinette is incorporated by folding it back (maintaining traction) over and into the plaster cast or by rubber tubing attached to a wire loop incorporated in the plaster. It is the responsibility of the surgeon who orders the evacuation of the patient to remove weights and substitute a self contained traction device *PRIOR* to transfer to the aeromedical staging unit.

J. *Plaster cast*: All circular casts on patients evacuated from Vietnam should be bivalved. This allows for the expansion of soft tissue at decreased atmospheric pressures as well as rapid access to a serious wound beneath the cast. A useful means for continuing the care of the patient with a plaster cast is attained by appropriate markings on the cast itself. Such inscriptions should include the date and time of injury, the date of surgery and cast application and a simple sketch of the bone injury. Looking for this vital information scattered in the chart can waste valuable time in an urgent situation.

Stable patients being moved from PACOM hospitals to CONUS may be moved without bivalving at the discretion of the attending physician. Such patients should be casted at least 48 to 72 hours prior to leaving the originating hospital and both the cast and the flight tag should be clearly marked to indicate that bivalving is not required.

K. *Vascular injuries*: Patients who have had vascular injuries require special attention and immobilization. Cast should be bivalved and windowed to provide easy emergency access to control hemorrhage. When tactical situations permit, primary repair or graft cases should *not* be transferred from Vietnam for fourteen or more days post repair. Patients should *not* be transferred from PACOM hospitals to CONUS in less than 21 days after repair. Cases transferred should have the repair date, location, and type of repair inscribed on the cast or dressing.

L. *Medications*: Medication orders must include routine drugs such as malarial prophylaxis or eye drops as well as special items such as properly typed and cross-matched whole blood if the patient should require transfusion during movement. Certain medications, such as antibiotics, narcotics and analgesics should have a recorded "stop order" to avoid an undesirable extension of this course of therapy. It is essential that the physician ordering evacuation complete the flight tag accurately to assure that antibiotic therapy is continued on schedule or discontinued as required. Some medications are not normally available in standard supply and when these are to be continued during patient transfer, an adequate supply must accompany the patient in individual prescription bottles.

M. *Ice blankets*: Do not remove a patient from the ice blanket abruptly and evacuate the patient. Equipment is not available aboard the aircraft to continue such treatment. Convulsions, high fever and respiratory distress can be expected to develop if this principle is not adhered to throughout the system.

N. *Physician attendants*: When a patient is considered to require a physician in attendance, consideration in selecting this physician should be given to the type of care anticipated in flight. An appropriately trained physician should accompany this patient. The medical attendant assigned to a particular seriously ill patient is expected to accompany that individual all the time and all the way to the destination hospital.

GENERAL SURGERY*

Intra-abdominal Injuries

General: The occurrence of intra-abdominal abscesses continues to be a major problem following injury to abdominal viscera. Establishment of *adequate drainage* is an absolute necessity if the incidence of this significant complication is to be reduced.

* Taken from Proceedings of CINCPAC Fourth Conference on War Surgery, February 1970.

Effective drainage can be obtained if the following recommendations are observed:

1. Placement of drain site in a *dependent* position —*posterolateral* abdominal wall. This principle has been violated repeatedly.

Anteriorly placed drainage is not adequate. The abdominal wall must be prepped and draped widely ("table to table") in anticipation of proper drain placement.

2. Adequate size stab wounds for drain site (two fingers).

3. Use of multiple Penrose drains.

4. Frequent movement of drains.

The study group felt that sump drainage should also be utilized, particularly in the subphrenic spaces and in the pelvis. When drainage diminishes, frequently in 48 to 72 hours, the sump drain can be removed. This will avoid the danger of injury to adjacent viscera by the semi-rigid tube. Concurrently inserted Penrose drains should be left in place.

A midline incision is recommended for abdominal exploration. Interrupted wire closure is recommended for the fascial layer. Additionally and especially if peritoneal soiling is found, wire retention sutures may be used. These should be properly spaced and tied without tension over protective tubings to avoid compromise of rectus muscle blood supply and subsequent disastrous abscess formation and loss of abdominal wall tissue.

Stomach

Debridement of wound edges, hemostasis and two-layer closure of the wound have been most effective in the management of the majority of gastric wounds. On occasion, resection with gastroduodenostomy or gastrojejunostomy may be necessary. Depending upon the extent of resection performed, vagotomy may or may not be added.

Liver Injuries

The principles involved in handling liver trauma include adequate drainage, suture for hemostasis, resection of devitalized tissue and drainage of the biliary tree. All liver wounds should be afforded adequate, dependent drainage. It is mandatory that the drainage incision be large and placed as far posteriorly as possible. The use of sump drains is recommended in hepatic trauma of any significant magnitude. Suture of liver substance is primarily to secure hemostasis and stop biliary leakage. Care should be taken not to suture the liver capsule over an intrahepatic cavity, which could provide a setting for future hepatic abscess or hematobilia. All devitalized liver tissue must be debrided and in more severe cases, this may approach the point of total hepatic lobectomy.

T-tube drainage of the common duct is acceptable in severe cases of hepatic trauma. This may help to decompress the biliary tree and, perhaps of greater value, it offers an excellent means for later diagnostic study. T-tube decompression is not a substitute for adequate external drainage. If for some reason the common duct cannot be utilized, performance of a cholecystostomy may be considered. Neither T-tubes nor catheters should be removed prior to evacuation out-of-country.

There were three main degrees of liver wounds reported. The first is a wound created by low velocity fragments penetrating the substance of the liver. Such wounds usually present with minimal to moderate bleeding and limited anatomic disruption of the liver. They are treated by debridement, hemostasis and external drainage. It was the general consensus that this type of wound did not present particular problems of management.

The second is one which is due to missile fragments, causing shattering of the liver parenchyma and hemorrhage of a moderate to severe degree. Resective debridement, hemostasis, biliary tract decompression, and effective external drainage are required. It is in this type of wound that surgical judgment is needed to decide whether hepatic lobectomy will be necessary to control the hemorrhage.

The third type of liver wound is that caused by a high velocity missile with extensive shattering or maceration of liver substance. This is always associated with severe hemorrhage. It is apparent when the wound is first evaluated that partial hepatectomy or lobectomy will be required. It is this type of injury that taxes all of the skills of the entire surgical team. Mortality is consistently high in this group.

The following guidelines are presented:

1. The midline abdominal incision provides adequate exposure. On rare occasions it may be necessary to extend the abdominal incision into the thoracic cavity to obtain additional working room.

2. Control of hemorrhage during resection can be facilitated by the use of hepatic inflow occlusion, which can be safely utilized for 15 minutes in the normothermic patient or up to ½ hour under hypothermia. (Cooling blanket or iced saline into peritoneal cavity.)

3. The line of liver resection should be at the edge of devitalized tissue.

4. The use of packing as a definitive means to control liver hemorrhage is not recommended except in extreme circumstances.

5. Injuries to the dome of the liver frequently involve the diaphragm. Such injuries must be carefully searched for and repaired in order to prevent biliary pleural fistulas.

Duodenal and Pancreatic Injuries

Duodenum: The recommended treatment for duodenal injuries is:

1. Simple closure in small penetrating wounds without extensive injury to the duodenum or surrounding structures. Wound edges must be debrided.

2. Resection and primary anastomosis when there is more extensive damage to the duodenum if it is technically feasible.

3. Serosal patching as a definitive procedure initially only when other forms of treatment cannot be safely utilized.

4. Pancreatoduodenectomy is to be used only for those cases in which the duodenum and pancreas are so severely injured that no other form of therapy is feasible.

5. If extensive loss of the distal duodenum precludes the re-establishment of duodenal continuity, Roux-Y anastomosis with the jejunum is indicated.

The majority of duodenal wounds which result from penetrating injuries of the abdomen are associated with other organ injury; principally, stomach, liver, vena cava, pancreas and kidney. For this reason it is mandatory to examine the duodenum in all penetrating wounds of the upper abdomen to avoid missing this injury. This can only be accomplished by adequate mobilization of the duodenum by the Kocher maneuver. *Adequate posterior* dependent drainage with sump tubes and Penrose drains is necessary in the management of these injuries.

Use of duodenostomy tubes to protect the suture line is to be condemned. If a vent is indicated, retrograde passage of a catheter from the jejunum to the site of repair will prove to be effective.

Pancreas: The treatment of pancreatic wounds recommended by the study group is:

1. Debridement and drainage of the pancreas in those wounds not associated with extensive damage or disruption of the major pancreatic duct.

2. Suture and drainage for those injuries in which there is a small tear of the pancreatic capsule without disruption of the major pancreatic ducts.

3. Resection and drainage for injuries in which there is maceration of pancreatic tissue, transection of the pancreas, or disruption of the major pancreatic ducts.

4. Pancreatoduodenectomy in those patients with such severe damage to the head of the pancreas and duodenum that no other procedure is feasible.

5. The pancreas should be examined in all penetrating wounds of the upper abdomen and, when injury is suspected, the gastrocolic omentum should be divided so that the entire pancreas can be visualized.

6. Sump tube drainage is strongly recommended for use in pancreatic injuries in addition to Penrose drains. As with duodenal injuries, infection accounts for the majority of complications and most of these can be attributed to inadequate drainage.

Small Bowel Injuries

Wounds of any portion of the small bowel require inspection of the *entire* bowel to avoid missing small, single perforations. Small penetrating wounds may be closed in the usual fashion; however, multiple wounds and those with destruction of small bowel tissue within a relatively short segment are best managed by segmental resection and anastomosis rather than multiple separate wound closures.

Thorough evaluation of mesenteric blood supply is mandatory prior to closure of the abdomen. Single loop vessel injuries may be ligated. However, multiple vessel damage and large areas of hematoma must be carefully evaluated and if there is a deficient blood supply to a portion of the bowel, resection and anastomosis at viable levels is mandatory.

Right Colon Wounds

Data concerning the morbidity and mortality of right colon wounds treated during the past year were reviewed. The recommendations are:

1. Small penetrating wounds, 1 cm or less, after debridement may be primarily closed by sutures after examination of the retroperitoneal space has been completed. Tube cecostomy with fixation of the cecum to the abdominal wall should be considered.

2. A high incidence of complications (leakage, abscess) has been found after ileo-transverse colostomy. Previous recommendations for frequent use of the operation are withdrawn and ileostomy with distal mucous fistula is recommended. The same technique should be followed as in formation of a permanent ileostomy (maturation, appliance application,

gutter space obliteration, avoidance of drain sites, etc.)

3. Exteriorization of the cecum and/or ascending colon should be avoided because of the mechanical difficulties encountered postoperatively.

Miscellaneous but associated problems which are often a consideration:

1. Lesions of the right iliac fossa associated with right colon injuries must be adequately debrided to include the fracture of the pelvis. If the acetabulum is involved, formal hip joint exploration is indicated.

2. All types of wounds of the ascending colon should have adequate exploration of the retroperitoneal space to rule out additional lesions of the large bowel, kidney, ureter, or other retroperitoneal tissue. In such instances drainage must be accomplished through a large incision in as dependent a portion of the flank as possible.

Transverse and Left Colon Injuries

The principles of management of combat casualties with wounds to the transverse and left colon are well established and generally well followed.

It is recommended that with the exception of certain right colon injuries, as discussed previously, all colon lacerations must be treated as follows:

1. Exteriorization as an open loop colostomy is recommended for single colon injuries including contusions with potential breakdown. In all instances the colon must be opened as early as practical to afford decompression. This can be safely done within 48 hours after operation. Failure to open the colostomy is an invitation to disaster.

2. When exteriorization is not possible repair and proximal colostomy is recommended. The colostomy should be constructed so as to truly divert the fecal stream and protect the distal injury or repair. The functional end should be separated from the mucous fistula end for a sufficient distance to allow appliance application. Unnecessarily wide separation is not recommended. Both ends should be matured. Sufficient mobilization should be obtained so as to avoid retraction or stretching of the mesentery with vascular compromise. Obliteration of the gutter space may be used to prevent internal hernia.

3. For low sigmoid colon injury it may not be possible to bring out a mucous fistula. In such instances the distal segment should be closed and left in place.

4. Widely spaced injuries may be treated as in paragraph 2 by converting the proximal injury to a diverting colostomy. In unusual circumstances when distal repair is not feasible, exteriorization of both sites may be required.

5. Repaired distal segments should be completely evacuated of feces by irrigation and lavage using anal dilatation to allow free egress distally. Generally this should be done at the operating table so that the distal repairs may be observed and protected from disruption. The peritoneal cavity should be protected from additional soilage.

6. Colostomies should not be placed in laparotomy incisions or where soilage of drain sites will occur.

Rectal Injuries

Rectal injuries continue to cause unnecessary, frequent and extensive morbidity because of:

1. Failure to recognize the injury.
2. Failure to completely divert the fecal stream.
3. Failure to provide free presacral drainage.

The following principles and methods are mandatory to avoid the above occurrences:

1. A high incidence of suspicion must be present even when wounds are remote from the perineal area, and especially when fragments are seen on X-ray examination in the pelvic region. Digital and sigmoidoscopic examinations are mandatory and when evidence of injury is found, laparotomy is indicated.

2. Diverting colostomy should be done as described under left colon injuries.

3. Debridement and primary closure of the colorectal injury should be done if possible.

4. In any event free presacral drainage is essential to healing. Wide gentle development of the presacral space must be achieved, which usually requires coccygectomy. Drains should not be placed through entry wounds or bone.

Extraperitoneal Injuries

Retroperitoneal injuries generally involve multiple organs and present difficult problems in management. In caring for such wounds, the following recommendations are made:

1. Preoperative IVP—to assess bilateral involvement and function, if blood pressure above 80.

2. Perforating trunk wounds should have exploration and debridement of the *back wound prior to abdominal laparotomy* whenever possible. (See section on Debridement).

3. Explore retroperitoneal area by reflecting the gut—check visually and manually.

a. Right side: Check head of pancreas, duodenum, vena cava, superior mesenteric artery, kidney, ureter, and posterior musculature.

b. Left side: Tail of pancreas, transverse duodenum, aorta, inferior mesenteric vein, kidney, ureter, and posterior musculature.

Pelvic Injury (See section on Genito-urinary tract)

1. Adequate X-ray evaluation (to include IVP, cystourethrogram, etc.).

2. Assure urinary bladder drainage (for diagnosis of GU injury and urinary retention).

3. Assess extent of damage to other systems (especially rectum and GU system).

4. Debridement must be aggressive. At the time of initial debridement, free bone fragments should be removed.

5. Be prepared for massive bleeding.

a. Ligation of one or both hypogastric arteries *has not proven helpful* in establishing hemostasis.

b. Packing of wound may be last resort in control of bleeding.

6. Redebridement in a few days may be necessary.

7. In severe wounds of the perineum with uncontrollable hemorrhage and damage to the rectum, abdomino-perineal resection may be the only means of controlling hemorrhage and obtaining adequate debridement of the area.

8. Pelvic wounds involving the hip and acetabulum. The pelvic wound or fracture should be exposed through the pelvis and the hip joint through a formal posterolateral hip joint incision, which is left open after debridement.

Treatment of Large Abdominal Wall Defects

Large abdominal wall wounds should be thoroughly debrided. If the resultant defect cannot be closed by local soft tissue, Marlex mesh may be used even in the presence of contamination. A practical method for field use is to cover the defect with moist packs to prevent evisceration. Adhesions and granulations will rapidly form directly on the presenting abdominal contents which may then be skin grafted. Other foreign materials, including free fascia lata grafts, should not be used in the *contaminated* wound.

Special Postoperative Problems

Stress Ulcer

This alarming and serious complication is most often associated with abdominal sepsis and head injuries. Bleeding that results is often severe and unrelenting.

About one-half of patients will respond to large-bore gastric sump drainage, ice water lavage, sedation, antacids and blood replacement. Large blood clots must be evacuated before the stomach can be put at rest. When bleeding has ceased, search for hidden abdominal sepsis should be done and treatment instituted. Consideration should be given to treatment with atropine or probanthine and valium during or after bleeding.

As blood replacement approaches 8 units, surgical intervention is usually necessary. Bleeding sites may be gastric or duodenal with most reports incriminating the stomach. Multiple bleeding sites commonly are found, sometimes presenting as shallow friable erosions scattered throughout the stomach.

Operative management consists of vagotomy and either pyloroplasty or partial gastrectomy with or without oversewing of bleeding points. Standard 70% gastrectomy without vagotomy is not recommended based on followup experience in PACOM hospitals.

Rebleeding after vagotomy and pyloroplasty may be expected in 20% of patients and if abdominal sepsis persists the incidence of rebleeding is well over 50%.

Although vagotomy and resection represent a more extensive procedure, the incidence of rebleeding is far less than with vagotomy and pyloroplasty. In the presence of abdominal sepsis, one should consider the hazard of additional operations for rebleeding. If the peritoneal cavity is clean and the stomach presents with multiple punctate bleeding points resembling erosive gastritis, then vagotomy and pyloroplasty might be considered first since the risk of reoperation is lessened.

Consideration should be given to anticipatory management of stress ulcers when repeated sepsis requires operative intervention. If the stomach is accessible and not involved directly in the septic process, consideration should be given to placement of a gastrostomy tube which provides necessary decompression and allows easier lavage treatment of ulcerative bleeding should this occur.

Acute Acalculus Cholecystitis

This is an occasional consequence of nonspecific trauma occurring usually one to three weeks post injury.

Hyperalimentation

Massive weight loss (20 to 30% TBW) in a two to three week period is frequently associated with extensive trauma, repeated operations, delayed healing and sepsis. Where gastrointestinal tract function and absorption are not up to par, consideration should be given to early intravenous hyperalimentation. Although the weight loss and negative N balance may not be entirely corrected, the method may be of decided benefit in promoting healing processes, reducing weight loss and shortening the recovery phase. Urinary glucose spillage usually decreases spontaneously as tolerance develops.

The method is reported in Annals of Surgery, June 1969.

ANESTHESIA*

Anesthesiology has made many advances in the resuscitation and anesthetic care of casualties in Vietnam as compared to previous conflicts. The advent of new drugs, anesthetics and equipment have all contributed. The availability of better trained personnel in more adequate numbers has certainly been a prime factor. There are many differences between the anesthesia problems encountered in Vietnam and those encountered in day-to-day civilian practice.

Equipment at most hospitals, at the present time is comparable to that used by anesthesiologists in CONUS (Continental U.S.). It has been possible to replace the antiquated equipment of the field type left over from World War II. Modern and safe anesthesia equipment is an absolute necessity if the more seriously wounded are to survive. Much of the equipment and many of the drugs now used in the specialty of anesthesia are new. Some are still too new to have been placed on the standard supply tables. These items must be specially purchased on the open market as nonstandard items if the casualty is to be provided the outstanding anesthetic care to which he is entitled.

Due to climatic conditions and the heavy workload, equipment in general tends to deteriorate at a faster rate than in the United States, and the need for continuous preventive maintenance needs to be stressed.

Airway Management

Airway management should begin on the battlefields and continue along the evacuation route until the patient reaches a treatment facility. In order to accomplish this, corpsmen should be given extensive indoctrination in airway management. Present field kits should include Geudel airways and other equipment necessary to maintain an adequate airway. The wisdom of teaching corpsmen the elements of tracheostomy and intubation is controversial. However, there have been instances where the equipment was available, and a corpsman was capable of performing life saving intubation or tracheostomy. This equipment, however, is not readily available in some areas. The anesthesiologist and the nurse anesthetist at all levels of field care should continue to teach the proper use of equipment and techniques for respiratory resuscitation. Patients on arrival should be treated for respiratory distress by the immediate insertion of either a nasotracheal or an oral tracheal tube where indicated. In casualties where adequate ventilation may be restored within 48 to 72 hours, the endotracheal tube, preferably a nasotracheal tube which is better tolerated, should be used rather than a tracheostomy, as the first approach in airway resuscitation. In patients who require tracheostomy because of severe wounds, the initial use of a nasal or oral endotracheal tube will convert the procedure from an emergency to an elective one performed under controlled conditions. In the management of respiratory problems, tracheostomy is recommended in the following instances:

1. In severely traumatized patients, where either the danger of aspiration or the need for assisted ventilation or anesthesia exists, a double-cuffed or fluted-cuffed tracheostomy tube adaptable to both resuscitative and anesthesia apparatus, should be used.

2. In the comatose patient where the aspiration of vomitus is a potential problem.

3. Where adequate tracheobronchial toilet must be accomplished to prevent complications of the already compromised pulmonary system.

* Taken from Proceedings of CINCPAC Fourth Conference on War Surgery, February 1970.

4. In patients who will require prolonged (longer than 72 hours) respiratory assistance in the postoperative period and during evacuation out of country.

The following are recommended in the care of tracheostomy or endotracheal tubes:

1. The cuff should be inflated with just enough air to stop the air leak around the tube and no more.

2. See tracheostomy care under aeromedical evacuation section.

3. Suctioning of tracheostomy tube or endotracheal tube:

A. Aseptic technique should be employed.

B. Many wall suction units will withdraw excessive amount of air (up to 30 liters per minute), therefore the suction catheter should be quickly passed in and out of the trachea with suction applied only as the suction catheter is withdrawn.

C. The patient should be allowed to take at least four breaths spontaneously or should be artificially ventilated at least four times between passages of suction catheter into the trachea.

D. It is recommended that prior to suctioning, the patient be given 100% oxygen to breathe for at least two minutes in order to reduce the risk of hypoxemia.

Bag, mask, and non-rebreathing valve combination such as the AMBU bag have made mechanical resuscitators obsolete. The bag, and mask and non-rebreathing combination is considered to be a better unit for emergency resuscitation for the following reasons:

1. Simple to use.

2. Inexpensive.

3. Maintenance is negligible.

4. Readily adaptable to most all types of artificial airways.

5. Does not require an oxygen source, but may be adapted to oxygen easily.

If oxygen is supplemented through the intake attachment, the oxygen flow rate pressure should not exceed the valve spring tension in those valves without a safety pop-off valve, or in a malfunctioning safety pop-off valve, for the valve will malfunction. This will result in excessive pressure delivered to the lung of up to 50 lbs. per square inch. Such pressure may rapidly rupture the lungs.

6. Non medical and paramedical personnel can be easily trained in its proficient use.

A significant number of casualties present serious pulmonary problems in the postoperative period. Some of these patients die from these respiratory problems if adequate intensive respiratory care is not instituted. Assistor controller type respirators are readily available in Vietnam and these machines are used extensively. However, they sometimes cannot adequately ventilate the often encountered patient who has decreased pulmonary compliance and increased airway resistance. In these patients, the volume-limited respirator rather than the pressure-limited respirator is more effective. The adjustment of ventilators mainly, flow rates, volume, and the percentage of oxygen should be determined by a physician.

Premedication

The need for routine premedication of patients does not exist. Atropine, when needed, should be given intravenously just prior to the induction of anesthesia.

Techniques

There are many considerations to make in the choice of anesthetic technique. The patient's overall condition should be the primary consideration. Will he tolerate the intended anesthetic techniques? Operative site is another prime consideration. The experience of the anesthetist involved is the other most important factor in the choice of anesthetic technique. Those physicians with the most experience will tend to block where at all possible. The majority of patients undergoing surgery in Vietnam are anesthetized under general anesthesia. This is usually accomplished by a thiopental-type induction and maintenance with halothane, nitrous oxide and oxygen. This technique, with or without relaxants, has been the method of choice in most cases requiring general anesthesia. The advantages of halothane in a combat zone include its rapidity of induction, ease of administration, non-explosiveness, and applicability. In addition, it should be stated that the rapid emergence from anesthesia and the lack of nausea and emesis postoperatively reduced the requirements placed on personnel of the surgical intensive care unit. Halothane is a potent vasodilator and no doubt increases peripheral perfusion. In many patients it is difficult to obtain or maintain an adequate blood pressure, especially on induction, and of course halothane is not introduced in a markedly hypotensive patient. In such a hypotensive patient, a nitrous oxide-oxygen technique may be used, being supplemented with or without a narcotic and/or a muscle relaxant as indi-

cated. The recent studies in the halothane controversy indicate that the problem is one of hypersensitivity with repeated exposures to the drug, rather than a true hepato-toxicity. Many hospitals in Vietnam are using repeated halothane anesthetic exposures on the same patient.

Methoxyflurane has been found useful in the following situations:

1. It is useful for dressing changes and short procedures where a strong analgesic rather than a depth of anesthesia is required.

2. Methoxyflurane should be considered in the high risk patient who is brought to the operating room for other than the initial surgery and who is hypoxic on 100% oxygen.

3. It is a valuable agent in situations where a high concentration of oxygen is required, or where nitrous oxide might be hazardous.

4. Methoxyflurane produces excellent muscle relaxation, and in some circumstances may be preferable to the muscle relaxant drugs.

The greatest disadvantage of methoxyflurane is its long period of emergence which in a war zone may also be coupled with a lack of adequate recovery room facilities.

Neuroleptic analgesia. Example Innovar: This has been found to be an ideal agent for burns. It is also useful in supplementing a weak regional anesthetic, or a regional anesthetic such as a retrobulbar block in ophthalmology, or a laryngeal nerve block in ENT.

Muscle relaxants: It is strongly recommended that in those cases requiring muscle relaxants adequate amount be given to accomplish the desired relaxation. Adequate relaxation will save many valuable minutes of operating time.

Curare is proving to be the relaxant of choice, its advantage being the ability to be reversed pharmacologically. A disadvantage of curare is the hypotension which one may see with a rapid injection.

Flaxedil, a nondepolarizing relaxant with a shorter half life than curare may also be employed. But because of its anti-vagal effect, it may mask a valuable monitor, the pulse rate.

Succinylcholine drip is useful for short procedures. Disadvantages of succinylcholine drip are:

a. There is the danger of overdosage leading to a phase II block, or a prolonged block in the rare patient with an atypical pseudocholinesterase.

b. There is a need for an extra IV for the succinylcholine drip, and this is not always available.

c. When administered at an excessive rate, arrhythmia may be troublesome.

d. It has been noted in patients with burns, massive tissue injury, hemiplegia and paraplegia, there is a vulnerable period between two and ten weeks post injury when the administration of succinylcholine may cause arrhythmias leading to cardiac arrest resulting from hyperkalemia. During this period if at all possible, it is best that succinylcholine be avoided. If succinylcholine must be used during this vulnerable period, six to nine milligrams of curare intravenously five minutes prior to the succinylcholine may decrease the rise in serum potassium. Also during this vulnerable period, recent studies have shown that gallamine actually decreases the serum potassium level, and may thus be a preferred agent.

Intubation: A problem of acute gastric dilatation in the wounded is a very common occurrence. It is seen even in patients with minor wounds. It is probable that a combination of fear, pain, and air transport contribute to gastric dilatation. Forceful intermittent positive pressure breathing during resuscitation will compound this problem by pumping air into the stomach.

Trauma patients in general should be assumed to have a full stomach, and as such a rapid induction and intubation is utilized in most all casualty patients. The following technique is recommended as an acceptable technique for rapid intubation. To avoid the possibility of vomiting with aspiration, one may pass a nasogastric tube to evacuate air and liquid contents of the stomach. In order that the gastroesophageal junction not be held open, the nasogastric tube is then removed. At this point, 3 mg to 6 mg of curare intravenously will greatly reduce the increase in intragastric pressure resulting from the fasciculations of succinylcholine. In the traumatized patient preoxygenation with 100% oxygen for at least several minutes prior to rapid induction is advised. As rapid induction commences with the rapid injection of thiopental followed by succinylcholine, the cricoid cartilage is depressed firmly against the body of the vertebrae by an assistant. This Sellick maneuver will compress the esophagus and will help prevent passive regurgitation. This pressure must be maintained by the assistant until the cuff on the endotracheal tube is inflated within the trachea. Frequently, in the severely wounded patient, neither thiopental nor succinylcholine are required for tracheal intubation.

Spinal anesthesia: Spinal anesthesia is used in most hospitals. Although best used for isolated wounds of the leg, buttocks, or perineum, a combina-

tion of spinal anesthesia plus a brachial plexus block or other regional anesthesia can be used for wounds of three extremities. It is to be emphasized that when spinal anesthesia is to be utilized, a careful evaluation of the status of the cardiovascular system should be made. Many of these battle casualties, especially during the dry summer months, may be very dehydrated.

Brachial plexus block is the other most frequently used regional technique in management of the field casualty. The axillary approach is the recommended approach. A supraclavicular block is an excellent block for the shoulder, arm, and hand. The success of such a block depends upon the skill and the experience of the physician.

Sciatic, femoral, and lateral femoral cutaneous nerve blocks have been found to be very useful blocks for single leg injuries.

Intravenous local anesthetic blocks, although easily administered, are best used for patients who have minimal tissue or vessel disruption. The disadvantage of this technique is that too frequently the tourniquet must be released in order for the surgeon to evaluate the small vessel damage.

Local anesthesia should be limited to those patients who have small noninfected wounds which can be adequately debrided with this technique.

Casualties who undergo surgical procedures utilizing block or local techniques require the same careful monitoring and the intravenous administration of electrolytes and blood as those who are given general anesthesia for similar procedures.

Problems

Hyperthermia

Temperature should be checked on admission. Hyperthermia is extremely common in casualties in Vietnam. Elevated temperatures are often due to the combination of heat and dehydration, malaria, and/or infections secondary to delay in transportation from the field. Febrile patients should be cooled toward normal temperatures as rapidly as possible, and preferably before an anesthetic is administered. Equipment to induce hypothermia should be available. Conventional methods such as high flow techniques and use of vasodilators such as halothane will aid in this problem. The use of air conditioned operating rooms has done much to help alleviate this problem which was troublesome during the first few years of this war. The wounded patient's temperature should be monitored continuously. The anesthetist should be aware of any significant change in temperature, and should be ready to aggressively cool the patient should a hyperthermia develop. One must not overlook the possibility of a fulminating hyperpyrexic situation in the wounded patient.

Respiratory Depression With the Use of Antibiotics

Attention should be directed to the respiratory depression or apnea noted after the use of Kanamycin or Neomycin solutions for lavage and/or instillation into body cavities. Streptomycin, dihydrostreptomycin, and polymyxin B may also cause the same type of apnea. This is dangerous if the surgical team is unaware of its occurrence. This type of respiratory paralysis is due to a calcium-magnesium imbalance. The treatment of an antibiotic induced apnea rests in continued ventilatory support. One might also reverse this magnesium type paralysis with intravenous calcium, watching of course for any changes in the electrocardiogram. Neostigmine may only serve to aggravate the situation.

Fluid and Blood Replacement

The casualty which is usually dehydrated 1000-1500 cc from field duty requires a minimum of two liters of lactated Ringer's solution plus a compensatory blood volume replacement. In the severely traumatized casualty where multiple wounds exist and blood loss has been extreme, several intravenous routes should be immediately established. Large bore Rochester-type needles are recommended (Jelco or Angiocath). When cutdowns are necessary, it is recommended that the superficial femoral or upper extremity veins be utilized. It has been found that cutdowns in the ankles do provide an avenue for adequate fluid therapy, but it is difficult to administer blood through this route. The controls on this route are distant from the anesthesiologist and make it a difficult route for administration. In patients with major wounds of the abdomen and pelvis, only the veins of the upper extremities and neck should be utilized, in order to avoid the possibility of extravasation of transfused blood into the traumatized area. The intravenous route through the subclavian vessels has been used with increasing frequency. Complications tend to decrease as medical officers become more familiar with the technique of tapping this vessel. The complications recorded and documented are:

1. Hemothorax
2. Pneumothorax
3. Postoperative paresthesia in the extremity on the involved side
4. Tension pneumothorax

5. Massive hydrothorax caused by inadvertent infusion of replacement fluid into the pleural space

6. Air emboli

The route should be used only after due care is taken to assure proper placement in the subclavian vessel.

Blood types to be used. When the patient arrives in the triage area and the first IV is started, a blood clot should be obtained for immediate typing and cross matching. The most desirable blood for transfusion is as fresh as possible, group and type specific and completely cross-matched. Availability of this desirable situation requires about 40 minutes. Group specific blood with an immediate spin saline cross match requires 15 minutes. Low titre O+ blood may be obtained immediately. During periods of increased need for blood, care should be taken to request no more than immediate contingencies require so that the cross matching capacity of the laboratory is conserved and utilization of available units is maximized. A cross-matched unit on the shelf is usually not available to another patient. If a patient needs blood immediately, he should receive O+ blood. If it is determined that the patient is not type O+ and he has not received more than three units of type O+ blood, he can be changed to type specific blood without difficulty. If he has already received four or more units of type O+ blood, he should continue to receive type O+ blood. If it is determined after typing that the patient is type A+, he may receive type A+ blood without cross matching. *No other* types of blood other than O+, O−, or A+ should be given without cross matching.

When the patient has received type O+ blood rather than type specific blood and is returned to surgery within a few days, he should be typed and cross-matched for type specific blood. If he has not received large amounts of type O+ blood he will usually have re-established his own blood type within four days. If he can be cross-matched he should then receive type specific blood, and if he cannot be cross-matched he should continue to receive type O+ blood. It has recently been shown that a transfusion of over 15 units of ACD blood will result in a platelet deficit which will often result in clinical bleeding. Diffuse oozing that does occur may also be due to qualitative platelet abnormalities as evidenced by a thromboplastograph. In patients who receive massive transfusions and where oozing occurs, control is usually gained by administration of adequate amounts of fresh blood. After every 15 units of ACD blood administered, two units of fresh blood (freshly drawn within two hours) should be administered. In many facilities, fresh blood is utilized for this purpose fully realizing that there is an increased hazard of hepatitis or malaria being contracted from the donors, since the donors come from an endemic area of hepatitis and malaria. Where available, fresh frozen plasma which contains no platelets is utilized for the control of oozing. In a patient with uncontrollable oozing following massive transfusion a coagulation work-up should be carried out prior to, or simultaneously with treatment, and should consist of at least an examination of a peripheral blood smear, platelets, a prothrombin time (PT) and a partial thromboplastin time (PTT). Generally, a simple dilution of coagulation factors is characterized by a prolonged PT and PTT with normal platelet and fibrinogen levels. There is a rapid response to 2 or 3 units of fresh frozen plasma (FFP). In some instances platelets may also be depressed and fresh blood (FB) would be indicated. Hemorrhage due to disseminated intravascular coagulation is characterized by depressed platelet and fibrinogen levels and a lengthened PT and PTT. There is little or no response to FB and FFP. Heparin is the treatment of choice.

Hemorrhage due to fibrinolysis is indicated by a prolonged PT and PTT and a diminished euglobulin lysis time, shows little or no response to FB and FFP and is treated with epsilon amino caproic acid. In hemorrhage due to combinations of the above, the laboratory results may be inconclusive. In that case a trial with FB and/or FFP may well be indicated. The prophylactic use of FB and/or FFP in massively transfused patients is at best a waste of FB and FFP and at worst a potentiating factor in disseminated intravascular coagulation. FB and FFP should be given only to patients who are actually oozing and/or show abnormal coagulation studies.

In many hospitals, the use of one ampule of sodium bicarbonate for every 3 to 5 units of blood is routine. This practice can be used where routine intraoperative blood gas analysis is not available, but, where blood gas analysis is available and utilized, it will be found that this practice is unwarranted.

Massive blood transfusions require that blood be warmed during administration to avoid adverse effects on the cardiovascular system. Blood warming coils should be available and used in all units where the severely traumatized patient is being treated.

Each unit of blood administered should have a new blood filter so as to decrease the number of microparticles in the blood that enters the patient's blood stream. This may help decrease the number of

microemboli in the lungs that are believed to be one of the causative factors in the "Wet Lung Syndrome".

Overtransfusing does occur, although infrequently. When suspected, prompt diagnosis should be established by physical signs and symptoms and/or central venous pressure determinations. Under continuous central venous pressure monitoring, therapy consists of phlebotomy, intermittent positive pressure breathing, and digitalization if indicated. Undertransfusion is the usual problem and the condition is aggravated in the immediate postoperative period by oozing from raw surfaces. In the severely wounded patient, central venous pressure, urinary output, vital signs, and clinical evaluation of the patient are the minimal criteria to be used as guidelines for the rational use of blood. Except when mass evacuation is required, these patients should be retained at the initial treatment facility for a minimum of 24 to 48 hours to stabilize their cardiovascular systems.

Cross Infection From Anesthesia and Inhalation Therapy Equipment

The following is considered standard subcare in the cleaning of anesthesia and inhalation therapy rebreathing equipment to prevent cross infection.

1. Rubber rebreathing tubes, face mask, rebreathing bags and head straps.

a. Thoroughly wash with a detergent and scrub with a brush.

b. Wash with PhisoHex for five minutes or soak with Wescadine for ten minutes. Insure complete submersion by covering with a weighted object.

c. Rinse thoroughly; use potable or sterile water for rinsing.

d. Dry

2. Endotracheal tubes, oral airways, nasal airways, esophageal stethoscopes, plastic tubing and connectors for inhalation therapy machines.

a. Thoroughly wash with a detergent and scrub with a brush.

b. Rinse thoroughly.

c. Rough dry.

d. Immerse completely for a minimum of ten minutes in full strength Cidex solution. Insure complete submersion by covering with a weighted object.

e. Rinse thoroughly; use potable or sterile water for rinsing.

3. Ethylene oxide sterilization: If and when ethylene oxide sterilization is used in preference to cold sterilization, rinse equipment with sterile water when removing from sterilizer and allow to air for a minimum of 48 hours prior to use.

Evaluation of Evacuees: PACOM Hospitals

The above comments concerning the care of the severely traumatized patients in Vietnam apply to all patients who may arrive in PACOM hospitals for primary treatment from the field. However, the majority of patients being received at the present time from Vietnam have had at least one anesthetic prior to transfer. Except under periods of unusually heavy casualty flow, most of these patients will have been stabilized and adequate pulmonary function established prior to evacuation. However, when these patients are transferred out-of-country in the immediate postoperative period, fatigue develops and some dehydration and additional contraction of the blood volume is known to occur. Upon arrival in the PACOM hospitals, surgery and anesthesia should be delayed for at least 24 hours to permit rest and evaluation prior to induction of anesthesia for another surgical procedure. During this time the surgeon-anesthesiologist team can obtain the appropriate laboratory and X-ray studies and provide adequate hydration and blood replacement.

To the Editor: The cover photograph of your March, 1970 is NOT at the U.S. Naval Hospital, Danang.

LCDR H.D. Sponaugle, MC, USN
Naval Hospital
Portsmouth, Va. 23708

Sneaking a peak at the old Newsletter eh? Good for you!

To the Editor: I am writing to call to your attention an error in the March issue of the NAVY MEDICAL NEWSLETTER.

The cover photograph is credited as being located at U.S. Naval Hospital, Danang, which it is not. It would appear to be some Air Force installation.

Sincerely,
RADM H.P. Mahin, MC, USN
CO, Naval Hospital
Oakland, Calif. 94627

The gentlemen are correct. The activity pictured in our March cover is the 22nd Casualty Staging Facility at Danang. The base hospital located within the Naval Support Activity at Danang is not properly titled "Naval Hospital".

Our thanks to all friends and correspondents who brought the error to our attention. It's good to know you get—and read—our pub.

To the Editor: Perhaps the Navy Medical Newsletter could disseminate a worthy appeal for book contributions. Lieutenant Colonel Truong Ngoc Tich, Commanding Officer of Long Xuyen Military Hospital in An Giang Province, Long Xuyen, Vietnam, desires three copies of the Atlas of Surgical Operations by Zollinger, R.M. et al., 3rd edition, New York, Macmillan Company, 1967. The books are intended for presentation to graduates of a surgical preceptorship, under his guidance.

Dr. Tich manages one of the busiest hospitals in South Viet Nam, and his efforts represent the finest example of medical service in Viet Nam to help their own people.

Thank you,
CAPT Wendall A. Johnson, MC, USN
Director, Naval Reserve Division
Code 36, BuMed

CAPT Johnson has recently returned from Viet Nam where he was serving as Deputy Surgeon at MACV. It is difficult to imagine better use for books which may sit on shelves and remain unopened for some years, until pronounced "obsolete". Why not make someone very happy, and perform a real service for humanity as well?

To the Editor: I just received my copy of the March issue of the Newsletter. I was delighted to see the case report from the clinical notes of Surgeon Crawford. This was a particularly good report to start with, since it brings out several good points. First, it makes clear that the drug addiction problem has been with us a long time. Second, it indicates the importance of keeping detailed progress notes on any seriously ill patient. Lastly, the junior medical officer who begins to feel sorry for himself can read this and feel that maybe his own plight is not so bad after all.

Additional material which you have requested will be forwarded. Let me know if I can furnish any more information.

Sincerely,
RADM R.O. Canada, MC, USN (Ret)
The Greenbrier Clinic
White Sulfur Springs, West Va. 24986

RADM Canada's warm interest and support continue unabated. It is difficult to imagine the Navy Medical Corps ever without benefit of his loyalty and wisdom. Admiral Canada's many admirers will be as pleased to read this note as we were to receive it.

NOTES AND ANNOUNCEMENTS

FLUORIDATION—25th ANNIVERSARY

This year marks the 25th Anniversary of the date that fluoride was first added to municipal water supplies to reduce the incidence of dental caries in young children. In 1945, three communities began a program of adjusting the fluoride content of their water supplies to optimum levels. The three communities were Grand Rapids, Michigan; Newburgh, New York and Brantford, Ontario. Today, water fluoridation is recognized by responsible health authorities to be the most effective and least expensive method of reducing the incidence of dental caries in children during their developmental years.

At the present time, about 40 percent of our population is receiving the benefit of water fluoridation. The Department of Health, Education, and Welfare reported as of December 31, 1967, that almost 82 million people in the United States, or 52.8 percent of those utilizing public water supplies, were receiving the benefits of fluoridated water. Seven states have enacted legislation requiring fluoridation of municipal water supplies. They are Connecticut, Minnesota, Illinois, Delaware, Michigan, South Dakota and Ohio. An eighth state, Kentucky, requires fluoridation as one of the criteria for approval of a public water supply by its State Board of Health. South Dakota became the first state to schedule a state fluoridation referendum when the state legislature passed a bill to this effect in March 1969.

Data acquired from questionnaires and reports of inspections of 203 Navy and Marine Corps dental facilities, worldwide, reveal the current status concerning fluoridation.

Shore activities/facilities with dental personnel:	
Fluridation by station-installed equipment	55
Fluoridation by municipalities	45
Fluoridation (natural)	18
Fluoridation (natural, excessive)	1

Additionally, eight shore activities without dental personnel have reported fluoridation of their water supplies by station-installed equipment.

Dental officers are encouraged to invite the attention of their commanding officer to the provisions of BUMEDINST 11330. 1A concerning the adjustment of fluoride content of communal water supplies at military installations, especially where there is a child population in residence.

The Marine Corps Air Station, El Toro, California, and the Naval Communications Station (Cheltenham, Maryland), Washington, D.C., have reported that fluoridation of their water supplies was placed in operation on 20 January 1970 and 19 February 1970 respectively.

NURSING PERSONNEL—HEALTH MANPOWER

In 1969 more than 1,800,000 persons were in the Nation's active nursing personnel force, but only 680,000 were registered nurses. Some 345,000 were licensed practical nurses. The most numerous group consisted of 800,000 nurses' aides, orderlies, attendants, and homemakers-home health aides.

These facts are from "Nursing Personnel (Revised 1969)," a new Section 2 in the 20-section Health Manpower Source Book series. It is a publication of the Division of Nursing, the nursing arm of the Bureau of Health Professions Education and Manpower Training, National Institutes of Health.

This new publication contains the projection that by 1975 this country will need 1,000,000 registered nurses in practice. It presents figures to show that the professional nurse supply has grown steadily in the past 15 years, but not in proportion to the population growth. It further notes that the increase in numbers is counteracted by a trend to ward part-time employment for nurses.

According to "Nursing Personnel," 25 percent of the nurses in professional practice are employed part-time; 64 percent are married; 33 percent have reached 45, and the age level is steadily rising; men constitute only one percent of the supply. More nurses than ever before have college degrees, but there is still a scarcity of nurses with the education to serve as nursing faculty; administer nursing services; supervise staff nurses and large numbers of ancillary employees; and plan and provide nursing care that gives patients the benefit of advances in medical science and technology.

"Nursing Personnel (Revised 1969), a 145-page compilation of nursing personnel figures, projections, and discussion of projection methods, is available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, at $1.50 a

copy. Further information about nursing personnel supply and projected requirements is available on request from the Division of Nursing, 9000 Rockville Pike, Bethesda, Maryland 20014.—HEW NEWS Release.

NAVY OFFERS SCHOLARSHIPS TO MEDICAL AND OSTEOPATHIC SCHOOL STUDENTS

Qualified students are now eligible for Navy sponsored scholarships at approved medical or osteopathic schools. The actual program will commence on 1 July 1970 when 100 scholarships will be offered to eligible personnel. Eventually the Navy hopes to make a total of 200 scholarships available.

Applications for the scholarships will be accepted from all students presently enrolled in an approved School of Medicine or Osteopathy as well as those who hold letters of acceptance from such schools, but have not yet started their training. Military personnel on active duty who meet one of the above requirements are also eligible to apply if they have completed at least two years of their current service obligation.

Each applicant must be a United States citizen and must be qualified in all respects for a commission in the United States Navy. Students who are selected to participate in this program will receive many benefits. In addition to full tuition costs, including $200.00 yearly for books, they will receive the pay of a naval officer—ranging from approximately $6,000 to $10,000 each year depending upon their rank—and full medical care for themselves and their dependents.

Students who are selected must serve on active duty with the Navy for a period of time that varies with the length of the scholarship they receive. A four year scholarship requires the student to remain on active duty for a period of five years after he completes his internship. A student who receives less than a four year scholarship must agree to remain on active duty for a period of four years after his intern training has been completed.

Once coming on active duty, every student is eligible to receive additional training in a specialty of his choice. Numerous specialty training programs are available to Navy doctors; each program requires an additional period of obligated service from those who apply and are accepted. Selective Service obligations are satisfied by periods of active duty served after intern training has been completed.

Satisfactory completion of this Navy sponsored scholarship program will lead to a commission in the Navy Medical Corps. Successful applicants are initially appointed with the rank of Ensign; one year later they will be promoted to Lieutenant Junior Grade and approximately three years after their original appointment they will be promoted to Lieutenant.

Students who feel they are qualified and are interested in receiving additional information concerning this scholarship program may write to the:

Professional Division (Code 3174)
Bureau of Medicine and Surgery
Department of the Navy
Washington, D.C. 20390

BROKEN DENTAL APPOINTMENTS

HMC John R. Hinton, Medical Department Representative aboard USS DAVIDSON (DE 1045), has satisfactorily resolved the problem of forgotten dental appointments or failure to cancel appointments which cannot be kept, in order that the time allotted may be utilized for someone else.

In cooperation with the Dental Clinic, a copy of the dental appointment slip provided for the patient is stapled on the outside of the dental record, which is returned to the referring facility. The dental record is delivered to the Medical Department Representative who notes the scheduled appointment. A list of all up-coming appointments is maintained and posted in Sick Bay. With support of the Command, the daily Plan-of-the-Day (POD) lists personnel names, dates and times for all the appointments assigned on a given day. Members are reminded of given appointments since the POD is read at quarters; if unable to report as directed, members promptly notify the Medical Department Representative or Division Officer so that the appointment can be canceled and perhaps rescheduled. The Dental Clinic can be appropriately advised within sufficient time to avoid loss of utilization of time and personnel, when necessary.

For Medical Department representatives on ships and stations without dental facilities, this sounds like a fine operating procedure. Perhaps others would do well to take note. (Please report adoptions of this suggestion to the Commanding Officer, USS DAVIDSON (DE 1045), FPO San Francisco, Calif. 96601.)

ACADEMIC HONORS FOR MSC OFFICER

LT Norman G. Ogelsby, a Navy Medical Service Corps officer, was the honor graduate from The George Washington University School of Govern-

ment and Business Administration. A member of the Health Care Administration Section of the Medical Service Corps, LT Ogelsby received his baccalaureate degree with distinction and was designated Student Marshall, signifying that he graduated with the highest academic average in the school.

As Student Marshall, he received his degree from Doctor Lloyd H. Elliott, President of The George Washington University, at the Convocation ceremonies, held at Constitution Hall. Mayor Walter Washington was the principal speaker at the midwinter convocation. A number of degrees were awarded; LT Ogelsby's high academic average placed him among the top twenty of over 600 students who received their degrees from the various schools at the university.

LT Ogelsby entered the service as an enlisted hospital corpsman in 1957. He received his commission as an Ensign in 1964 through the Navy's inservice procurement program for Medical Service Corps officers. A Vietnam veteran, Mr. Ogelsby received the Navy Commendation Medal with Combat V for his performance of duty with the First Hospital Company, First Marine Division.

LT Ogelsby has been assigned to duty at the U.S.

Capitol. In addition to his degree from the School of Government and Business Administration, he is a graduate of the Naval School of Hospital Administration at the National Naval Medical Center, Bethesda, Maryland.

MSC OFFICERS—EDUCATIONAL ACHIEVEMENT

The following Medical Service Corps officers received academic degrees at various Winter Convocations:

LCDR Robert V. Peterson COMUSMACV	Ph.D. Entomology, Oklahoma State University
LCDR Hubert H. Sowers, Jr. Naval Hospital, Boston	MBA, Health Care Administration The George Washington Univ.
LCDR Donald L. Bagnall Office of the Secretary of the Navy	BBA, The George Washington Univ.
LCDR Harry W. Bleh NAS, Norfolk, Va.	BBA (with distinction), The George Washington Univ.
LT Franklin W. Carter NavHosp, Portsmouth, N.H.	BBA, The George Washington Univ.
LCDR William E. Diebner NNMC, Bethesda, Md.	BBA, The George Washington Univ.
LCDR Paul W. Johnson BUPERS, Recruiting Div.	BA, Social Sciences, The George Washington Univ.
LT Norman G. Ogelsby Dispensary, U.S. Capitol	BBA (with distinction), The George Washington Univ.
LT Howard L. Skinner Medical Logistics Internship Program, DPSC, Philadelphia	BBA, The George Washington Univ.
LCDR John R. Tucker, Jr. NavHosp, Quantico	BBA, The George Washington Univ.

MEETING OF JOINT COMMISSION ON ALLIED HEALTH PERSONNEL IN OPHTHALMOLOGY

CDR B. R. Blais, MC, USN, Naval Hospital, San Diego, California, attended the Meeting of the Joint Commission on Allied Health Personnel in Ophthalmology which was held in New Orleans, Louisiana on 23–25 January 1970.

The Commission discussed the accreditation of the training programs presently in existence—five civilian and three Armed Forces Programs. They were tentatively accredited for a period of one year awaiting formal request for accreditation, on-site inspections and formal acceptance of the programs by the Training and Accreditation Committee and ultimately the Commission.

At a meeting held with the Chairman of the Training and Accreditation Committee, the following points were emphasized:

1. Training of ophthalmic medical assistants includes all medical training, including basic hospital corps school course (Class A).

2. Accreditation of any specialty program will require a standardization of curriculum, teachers, facilities, etc.

3. Basic Hospital Corps School course will be the core curriculum which will most likely be required by all specialties. Curriculum of our schools is quite similar to the accredited education program for medical assistants. An attempt should be made to have our A School accredited by the Department of Allied Medical Professions & Services of the AMA.

4. EENT Technician School "Class C" tentative accreditation is based on the new proposed curriculum. Standardization of the program in the two facilities, assignment of BUMED instructors, assignment of a full complement of EENT Technicians, budgeting of funds for the purchase of reference books, textbooks and audio-visual equipment and aids are most essential.

5. An on-site inspection will be scheduled at a later date by the Training & Accreditation Committee in order to review all aspects of the program.

The three military services are represented on the Commission. However, only one member of the military services sits on the board of directors of the Commission. By tri-service agreement, CDR Blais is the first military service member of the board.

DENTAL CORPS OFFICER PRESENTED SCOUTING AWARD

At the Far East Council Annual Recognition Dinner held on February 22 at Tachikawa, Japan, the Silver Beaver Award was presented to CAPT K. L. Longeway, DC, USN. This award represents the highest tribute bestowed upon a volunteer Scout Leader by a local council of the Boy Scouts of America in recognition of "distinguished service to boyhood", which includes service to scouting and other worthwhile community services. The presentation is made annually by the National Council upon recommendation of the Far East Council which includes Japan, Korea, Okinawa, Taiwan, Thailand and the Philippines.

CAPT Longeway has been serving in adult scouting positions since 1925 and is the present CO of the U.S. Naval Dental Clinic, Yokosuka, Japan. In the Far East Council, he is currently serving as District Chairman of Baden-Powell District, which includes Yokohama and Yokosuka, and is a member of the Far East Council Executive Board. Under his leadership, the district has enjoyed a 98 percent increase in members and a 33 percent increase in units.

DOINGS AT THE DENTAL SCHOOL

The Naval Dental School has received full accreditation from the Committee on Accreditation of the Council of Dental Education, American Dental Association. Enrolling only selected officers who have been practicing dentistry in the Navy for at least 5 years, the School offers a Graduate Program of 1, 2, and 3-year courses. Those who show special aptitude and skill during their first year are given further advanced training in one of the specialties. During second and third year courses, students receive intensive instruction and are supervised by dental officers who are members of American Specialty Boards.

The five accredited advanced dental specialty education programs are: endodontics, periodontics, oral pathology, prosthodontics and oral surgery.

The Dental School was responsible for developing the high speed turbine "handpiece" or drill that is now commonly used in both civilian and military dental practice. The Dental School also developed the plastic eye prosthesis that is so life-like, moving in phase with the recipient's natural eye.

A contract was signed on 12 February 1970 by Dr. Robert W. Wiley, Dean, Takoma Park Campus, Montgomery College, and CAPT William C. Wohlfarth, Jr., DC, USN, Commanding Officer, Naval

Dental School, permitting dental assisting students of Montgomery College to assist dental officers in the clinics at the Naval Dental School.

Under a plan conceived in 1960 and put into effect in 1966, the Naval Dental School and Montgomery College work together to provide 13 weeks of clinical experience for students enrolled in the Dental Assisting Program. Working in the Dental School's Graduate Officers' Clinic, students perform practical duties similar to duties they will be expected to know as graduates of an Associate of Arts degree 2-year program.

For three years, classes of 11 dental assisting students were given the opportunity to take practical training in the busy clinics at the Dental School. Letters of agreement were exchanged during those years and, finally, when the plan proved to be feasible and mutually beneficial, a formal contract was made. A small ceremony in honor of the occasion was held in the Commanding Officer's office. Attending was Mrs. Jane C. Frost, Chairman, Dental Auxiliaries Department, Montgomery College.

In the Official U.S. Navy Photo by Raymond M. Oswald, Naval Dental School, Dean Robert W. Wiley, Montgomery College, and CAPT William C. Wohlfarth, Jr., Commanding Officer, Naval Dental School, are shown signing a contract to provide clinical experience for Dental Assisting students.

BRONZE STAR AWARD FOR HM2 P. L. GRAY

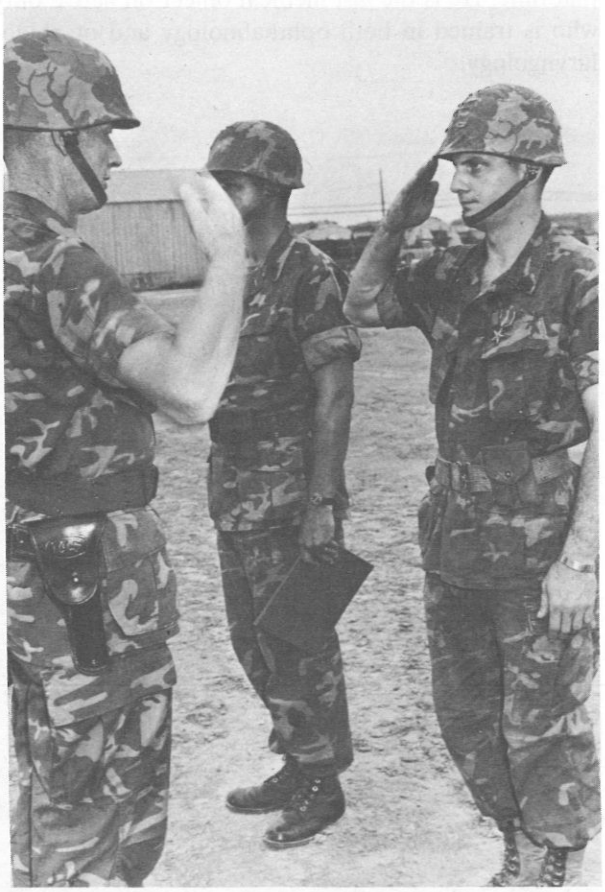
By CPL M. Thiffault, USMC

U.S. Navy Hospital Corpsman Second Class Paul L. Gray was recently presented the Bronze Star Medal with Combat "V" for his heroic action while serving with Company "B", First Battalion, Third Marines, Third Marine Division.

During the early morning hours of August 29, 1969, Company "B" came under heavy ground attack by a large number of North Vietnamese Army regulars while occupying a defensive position. Observing that the second platoon had sustained several casualties, HM2 Gray left his relatively safe position, and with complete disregard to his own safety, ran across the fire-swept terrain to administer first aid.

Noting that not all sections were engaged in the fight, he organized other corpsmen and maneuvered repeatedly through the hazardous area to direct them in moving the casualties to a landing zone for evacuation. Due to an increased volume of enemy fire directed at the LZ, medevac helicopters had to abort their mission temporarily.

Undaunted by the rounds impacting around him, Gray moved from one wounded Marine to another, rendering additional treatment, comforting and encouraging them. His action was instrumental in saving the lives of several critically wounded men.



HM2 Gray, currently attached to the Headquarters and Service Battalion Dispensary of Force Logistic Command (FLC), was presented the award by LCOL Lewis R. Webb, commanding officer of the battalion. BGEN M. J. Padalino, commanding general of FLC, was present at the ceremony.

U.S. Navy Hospital Corpsman Second Class Paul L. Gray, 3d from left (shown in photo), salutes Marine LCOL Lewis R. Webb, Commanding Officer of Headquarters and Service Battalion of Force Logistic Command, after being presented the Bronze Star Medal with Combat "V" for heroic action last August. HM2 Gray is currently assigned to the dispensary of FLC. (U.S. Marine Corps Photo by SGT Nick W. Myers.)—PAO Release, Camp Jay K. Books, Vietnam (Delayed).

CAPT J. T. SMITH RETIRES

CAPT John ("Jack") Terrance Smith, MC, USN, Retired, will go to inactive duty on 30 June 1970. In so doing he will terminate forty years of continuous active duty. He was placed on the retired list on 30 June 1960, but has been retained on active duty since that time. He is the last medical officer on active duty who is trained in both ophthalmology and otorhinolaryngology.

During his long and outstanding career he served on many ships and was a Flight Surgeon. From 1953 to 1959 he was Staff Medical Officer, COMAIRLANT. Since 1960 he has been Chief of the EENT Service at the Naval Hospital, Annapolis, Maryland.

So far as is known, the only living Medical Officer who exceeded CAPT Smith's 40 years of continuous active duty is VADM George W. Calver, MC, USN, Retired. Admiral Calver was on active duty for over 53 years.—Assistant Chief of Personnel and Professional Operations, BuMed.

SEMINAR IN OBS AND GYN

University of Florida College of Medicine, Gainesville: *Seminar in Obstetrics and Gynecology*, November 19-20, 1970. Guest Speakers: Lawrence L. Hester, M.D., Professor and Chairman, Dept. of Obstetrics and Gynecology, Medical College of South Carolina; and William Normal Thornton, Jr., M.D., Professor and Chairman, Dept. of Obstetrics and Gynecology, University of Virginia School of Medicine. Contact: Division of Postgraduate Education, J. Hillis Miller Health Center, Box 758, College of Medicine, Gainesville, Florida 32601.

OCCUPATIONAL HEARING LOSS PROGRAM

Summer and Special Programs, Colby College Bulletin

The 18th Annual Institute at Colby College, Waterville, Maine, will present a course of instruction on occupational hearing loss during 9–15 August 1970 under the direction of Joseph Sataloff, M.D.

For further information write:

John B. Simpson, Director
Summer and Special Programs
Colby College
Waterville, Maine 04901

ELECTRONICS FOR HOSPITAL PATIENT CARE

The Public Health Service has published a pamphlet dealing with a recent study of current electronic patient monitoring practices and equipment. The pamphlet is a valuable reference for intensive care units, surgery and recovery room operations, and medical repair services.

Designated "Electronics for Hospital Patient Care," Public Health Service Publication No. 930–D–25 is available from the Superintendant of

Documents, U.S. Government Printing Office, Washington, D.C. 20402, at 70 cents per copy.

IN MEMORIAM

CAPT Ernest R. Moeller, MC, USN, (Ret), died of Carcinoma of the Lung on 9 Mar 1970 in San Diego, California. He was born 8 June 1908 at Davenport, Iowa. Dr. Moeller was graduated from Northwestern University Medical School, Chicago, Illinois in 1936, had specialized in Pediatrics and was a member of the American Academy of Pediatrics. He reported for duty at Naval Dispensary in Long Beach, California in August 1941 and had served on the USS Crane from June 1942 to August 1943. He also had duty with the 2nd Marine Division FMF from January 1953 to June 1954. From August 1961 to July 1963 CAPT Moeller served at the Naval Mission, Rio, Brazil with additional duty as Scientific Attaché at the U.S. Embassy, Rio de Janeiro, Brazil. He was retired 20 August 1964 from the Naval Training Command at San Diego, California.

SUNSHINE OF CHU LAI

By GySgt James J. Oggerino, USMC

No matter how bright the sun shines at Chu Lai, Vietnam, there will always be a little darkness in the Marine Aircraft Group (MAG) 12 area. The darkness will be even more personal for the corpsmen in the MAG–12 dispensary now that little Lee is gone.

Lee was picked up last May by a Medcap team in Tam Ky. At the time he was suffering from malnutrition and intestinal parasites. Brought to the Chu Lai sick bay Lee was taken over by Hospitalman Ken Wilson (Los Angeles). During his first three months at the dispensary Lee was listless and seldom spoke. It is said he was even too weak to cry.

His age was estimated at between six and seven years, based on the fact that he had cut three permanent teeth.

As Lee's health improved so did his disposition. He began to smile. Soon this gave way to laughter and his laugh echoed throughout the area.

Lee loved to play cards with the troops. His favorite was a poker game he called "seven cards (you) no peek."

"He'd play the game with everyone in the sick bay line," said Hospitalman Third Class Kelly P. Foley, (N. St. Cloud, Minn.) who took over Lee's "guardianship" when Wilson rotated.

Last Christmas Lee received bags of toys and clothing from the wives and mothers of the MAG–12 Corpsmen. "He also received $12.75 in cash," Foley said. "Out of that he bought toothpaste, and sometimes a snack."

During the Christmas season he blossomed into a TV celebrity. After Bob Hope had finished a show, Lee was taken backstage by a MAG–12 chaplain, LT James W. Butler (Wilmington, Del.). The result was that Lee was interviewed by Bob Hope and given a two-minute segment of Hope's stateside TV show. He was listed on the credits as Lee-san.

But time was running out for Lee. Serious thought had been given his education. Arrangements were made to send Lee to the United World Mission Orphanage at Danang.

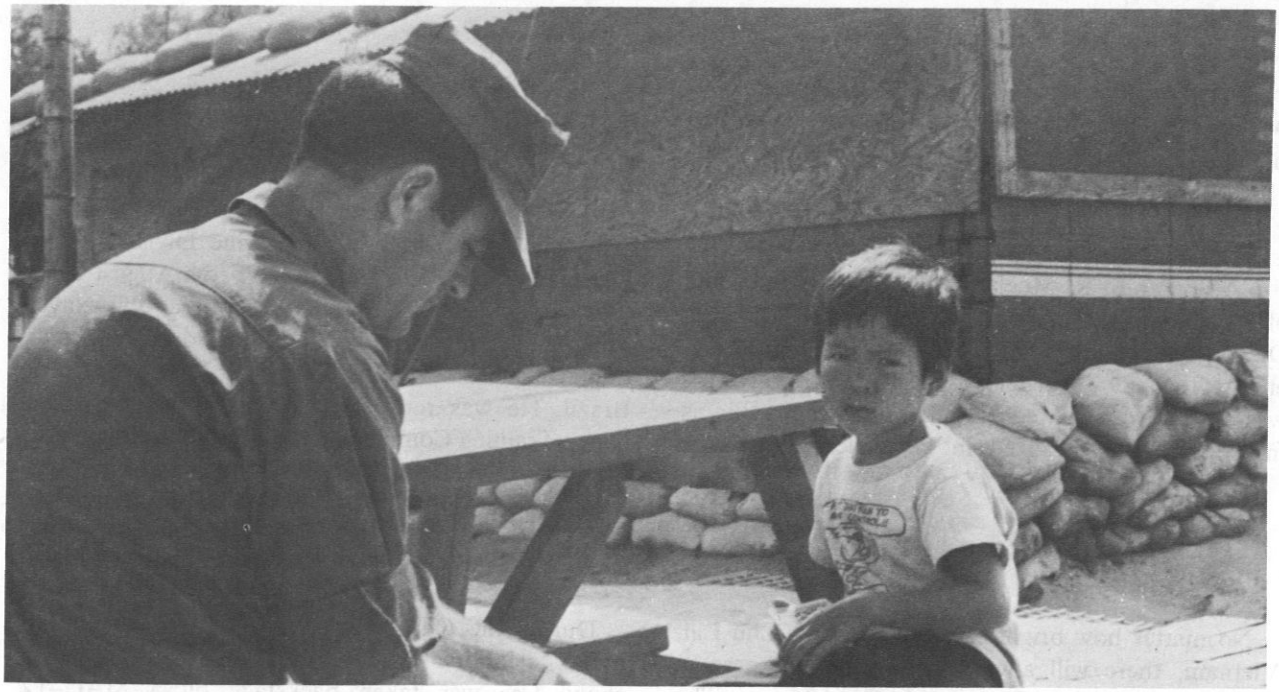
"We had to think of Lee's future," said LT Archie V. Lawrence, (Lake Village, Ark.), another MAG–12 chaplain. "He's smart and some day he'll be a good influence for his country."

Chaplain Lawrence also said a year's tuition had been donated from the Chapel Fund to help pay for Lee' education.

And so it came to pass that Lee left the MAG–12 area. When he arrived at Chu Lai last May, he weighed 24 pounds and had a malnutrition-distended waist of 32 inches. Today, 42 inches tall, Lee weighs 35 pounds and has a 19 inch waist.

The feeling of loss at Lee's departure is probably best expressed by Foley, who said: "Gosh, I'll miss him."

But no matter where Lee goes, he'll always bring the sunshine with him.—Public Affairs Office, 1st MAW, FMF Pacific, FPO San Francisco 96602.)



BIG BROTHER—Dong Lee plays "seven cards (you) no peek," with his friend LCPL Charles F. Morris (Fort Worth, Texas), an ambulance driver at Marine Aircraft Group-12 dispensary. Lee was 'adopted' by MAG-12 Corpsmen after being picked up by a MedCap team in Tam Ky last May.

TIME OUT—Dong Lee takes time out for a rest after a game of "seven cards (you) no peek," with Hospitalman (HM3) Kelly P. Foley, (Saint Cloud, Minn.).

AWARDS AND HONORS

Silver Star Medal

Thelen, Robert J., Jr., HM3 USN
Wood, Thomas J., HM2 USN

Navy and Marine Corps Medal

Andrews, Frederic H., HMCM USN
Bryant, Eugene M., Jr., LCDR MSC USN
Williams, Robert G. W., Jr., CAPT MC USN

Bronze Star Medal

Allsup, Robert G., HM3 USN
Barker, Samuel D., CDR MSC USN
Erwin, Larry G., HM3 USN
Foley, Alicia M., CDR NC USN
Fowler, John C., HM2 USN
Gray, Paul L., HM3 USN
Keely, George L., Jr., HM2 USN
Poe, Steven M., HM3 USN
Pollock, James E., HM2 USN
Sinnott, Joseph J., HM2 USN
Sizemore, Garland E., HM3 USN
Steward, Edgar T., CDR MSC USN
Swailes, Terry L., HM3 USN
Thompson, Robert B., II, HM3 USN
Wallace, Dennis T., HM2 USN
Woolsey, Clarence L., HN USN

Air Medal

Angelley, Gerald D., HMC USN

Joint Service Commendation Medal

Smith, James D., LT MSC USN

Navy Commendation Medal

Angelo, Lewis E., LCDR MSC USN
Bergguist, Robert A., HM2 USN
Brown, Seth E., LT MSC USN
Chartier, Armand P., CAPT MSC USN
Cracchiolo, Michael A., HM2 USN
Dewitt, James C., Jr., HM3 USN
Dial, William S., HM1 USN
Edwards, Harry J., HM2 USN
Fegreus, Robert G., HM1 USN
Garrett, James M., HM3 USN
Gould, James L., HMC USN
Hancock, Joe T., HM2 USN
Hickson, Richard J., HM2 USN
Holmes, Daulton G., HMCM USN
Johnson, Bobby, HMC USN
King, Gerald, HMC, USN
Kreamer, Jonathan D., HM3 USN
Lowe, Ronald E., HM3 USN
McAllister, Clyde H., LT MC USNR
Mencer, Charles, HM1 USN
Miller, Daniel D., HM2 USN
Miller, Theron D., HM2 USN
Mills, Michael A., HM3 USN
Munsterman, William N., HM2 USN
Niemeyer, Richard A., HM3 USN
Plichta, Richard T., HMC USN
Shatto, Ronald R., HMCS USN
Stephens, Bobby L., LCDR MSC USN
Swartout, Robert J., HMCM USN
Sykes, Thomas W., HN USN
Wagner, John E., HMC USN
Ward, Malcolm C., HM1 USN
Whitehead, James B., HMCM USN
Wilkie, Noel D., CDR DC USN
Willcutts, Harrison D., CDR MC USN
Woehrman, Norman A., HMC USN
Woodham, James T., CDR MSC USN
Wride, Ronald D., HM3 USN

Navy Achievement Medal

Arcaro, James A., Jr., HM1 USN
Baldridge, Herman P., HM1 USN
Bettis, Alvin C., HM2 USN
Blaylock, James D., LTJG MSC USNR
Blum, Ray O., HM2 USN
Buechler, Verlin D., HMC USN
Chittenden, Howard E., HM1 USN
Cook, Rawls M., Jr., HM2 USN
Cote, Roger R., HM2 USN
Davis, John H., III, HM3 USN
Ebert, Bruce W., HM2 USN
Emery, Norman S., HMC USN
Gibson, George E., Jr., HM1 USN
Grimm, Marvin W., HM3 USN
Harrell, Franklin L., HM3 USN
Hartnek, Henry G., HM3 USNR
Heck, Michael D., HM3 USN
Howard, Kenneth W., HM3 USN
Huff, John L., HM2 USN
Jackson, James B., Jr., HM1 USN
Johannesen, Dean A., HM3 USN
Johnson, Michael E., HM3 USN
Jung, James M., HM2 USN
Kline, Daniel H., HM2 USN
Lightfoot, Paul T., HMC USN
Lloyd, John P., HM3 USN
Ludwig, William C., LT MSC USN
Manley, Daniel L., HM2 USN

McKellar, David G., LTJG MSC USN
McMullen, Jimmy D., HM3 USN
Minhinnette, Teddy R., HM3 USN
Parker, Ronald L., HM2 USN
Phillips, Tommy G., HM1 USN
Reed, Allan W., Jr., HMC USN
Reilly, Sylvester M., HM2 USN
Sancet, William P., HM1 USN
Schnur, Michael H., HM3 USN
Sloan, Billie R. J., HMC USN
Smith, Daniel N., HM3 USN
Spear, Charles C., HM2 USN
Spencer, William E., HM1 USN
Staton, Harold J., HMCM USN
Summers, Burnie E., HM1 USN
Teno, Richard A., HM3 USN
Thomas, Clarence E., HMC USN
Thomas, Terry R., HM2 USN
Walker, Wallace J., HM1 USN
Warner, James C., HN USN
Wheetley, Woodrow D., LCDR DC USN
Willmann, Gary L., HM2 USN
Yost, Harry E., HM1 USN

Combat Action Ribbon

Hardin, Jefferson F., CDR DC USN

Meritorious Service Medal

Johnson, Calvin F., CAPT MSC USN
Nolan, Robert L., CDR MC USNR
Stanmeyer, William R., CAPT DC USN
Sterner, Doris M., CAPT NC USN

Certificate of Commendation

Bagaason, Michael A., HN USN
Blevins, Kenneth W., HN USNR

Certificate of Merit

Welham, Walter, RADM MC USN

Booklet: 5W. Keeping Food Safe To Eat. Gives information on storing, preparing, cooking, freezing and canning food that will help safeguard against food infections and production of toxins that cause illness.

1969. 12p. il.A 177:162 Price 10¢ *Available from*:
U.S. Government Printing Office
Division of Public Documents
Washington, D.C. 20402

UROLOGY RESIDENTS FROM ST. ALBANS NAVAL HOSPITAL WIN AWARDS

On 25 March 1970, four urology residents from the Naval Hospital, St. Albans, New York participated in the New York Section of the American Urological Association prize essay contest at the New York Academy of Medicine.

The following original papers were presented by the residents listed below:

1. Use of Clomiphene Citrate in Male Infertility —LCDR Ernest Simms

2. Etiology of Infertility after Retroperitoneal Lymphadenectomy—LCDR Carlton Kom

3. Predicting the Presence of Testes by Testosterone of Gonadotrophin Determinations—LT James Orsi

4. Congenital Uretero-Seminal Vesicle Fistula —LT Kevin O'Connell

Seventy-eight entrants participated in the contest. A distinguished panel of judges awarded LCDR Kom second prize in the clinical research category and LT O'Connell fourth prize in the miscellaneous category of the three category contest.

In the many years that the annual contest has taken place, this is the first time that St. Albans Naval Hospital has won two prizes and, percentage-wise, outperformed all other competing institutions.

CORRESPONDENCE AND CONTRIBUTIONS from the field are welcomed and will be published as space permits, subject to editing and possible abridgment. All material should be submitted to the Editor, Navy Medical Newsletter, Code 38, Bureau of Medicine and Surgery, Washington, D.C. 20390.

NOTICES should be received not later than the third day of the month preceding the month of publication.

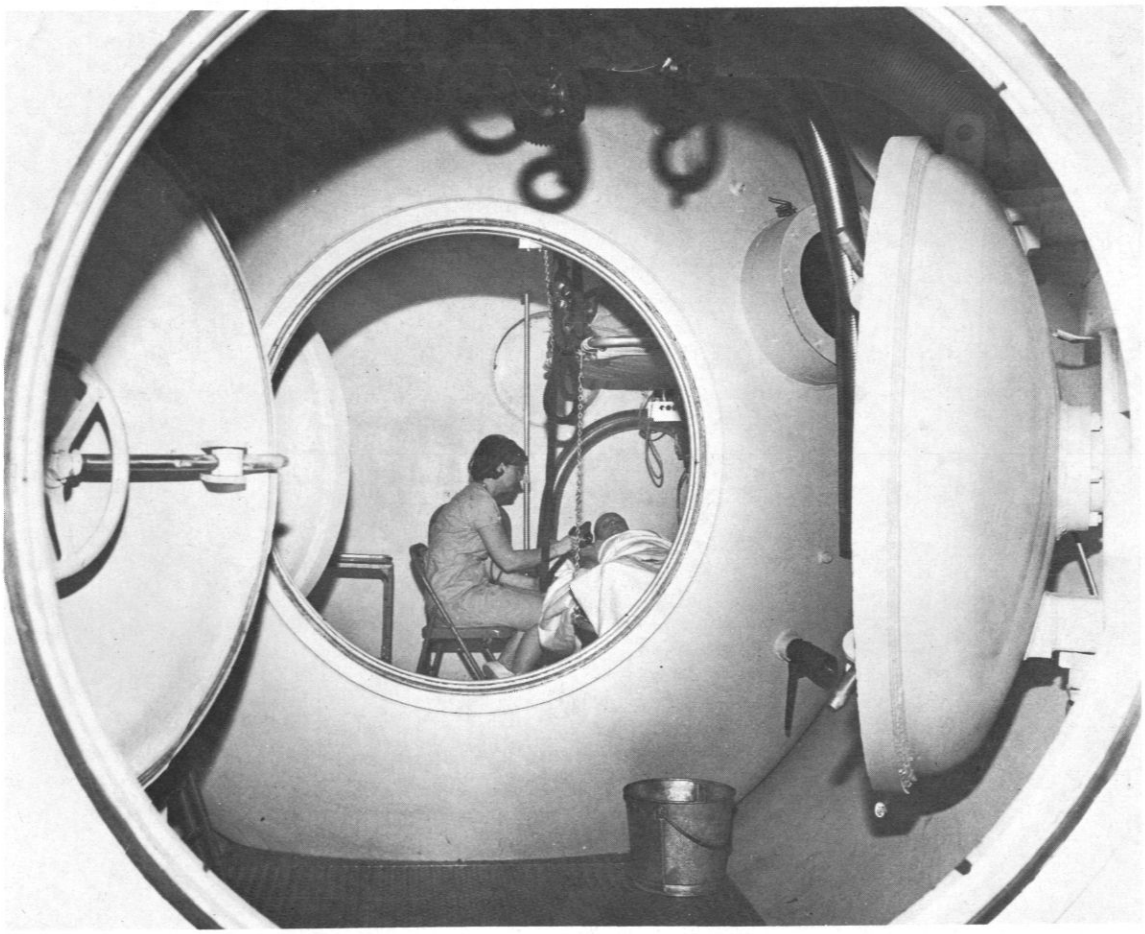
PROFESSIONAL PAPERS AND ARTICLES should be typewritten on one side of the paper, double spaced, with liberal margins. Original and one carbon copy are required. Generic names of drugs are preferred. If the author's present affiliation differs from that under which the reported work was done, both should be given. Unless otherwise indicated, it will be assumed that the article presented has not been previously printed or delivered elsewhere. Papers which have been delivered or printed elsewhere, covered by copyright, cannot be reprinted in the Newsletter without the written permission of the author(s) and copyright holder. It is the responsibility of the author(s) to inform the Newsletter when the material submitted has been previously used or copyrighted. The Newsletter will be happy to request permission to reprint from the copyright holder when this is necessary.

ILLUSTRATIONS are acceptable when they substantially contribute to the understanding of the basic material. Only distinct, glossy, black and white PHOTOGRAPHS which are functional can be printed. Prints should not be mounted, stapled, clipped or otherwise deformed and can be marked lightly on the back with the figure number. Legends should be typed consecutively on a separate paper with the indicated figures; credits for the photography may also be included. Identities of patients should be masked. DRAWINGS, TABLES AND GRAPHS should be minimal in number and properly labeled. They should be neatly done in heavy black ink on white paper, one to a page.

SUGGESTIONS are invited concerning the Newsletter, its content and form. Comments should be forwarded to the Editor.

U.S. NAVAL PUBLICATIONS and FORMS CENTER
ATTN: CODE 306
5801 Tabor Avenue
Philadelphia, Pa. 19120
Official Business

POSTAGE AND FEES PAID
NAVY DEPARTMENT



ENS (now LTJG) Mary A. Rau, NC, USNR, inside hyperbaric chamber, New London, Conn. administering O_2 to patient.

☆U. S. GOVERNMENT PRINTING OFFICE : 1970 393-305/12